Magnescale

PROFINET Interface Module

# MG80-PN

Read all the instructions in the manual carefully before use and strictly follow them.
Keep the manual for future references.

Operating Manual

# Table of contents

# Revision history

| Revision | Date | Description | Pages |
|---|---|---|---|
| 1.00 | 2020/07/27 | | All |
| 1.01 | 2020/10/28 | Corrections of errors and additions | All |
| 1.02 | 2022/04/27 | Add Status code table<br>Add response data for NRT communication command<br>Corrections of errors and additions | All |

# 1. Introduction

MG80-PN is an interface unit main module which enables acquisition of the multi-axis measurement data by connecting with a PC or PLC via PROFINET communication protocol. This manual explains the setup procedure and detail of the functions.

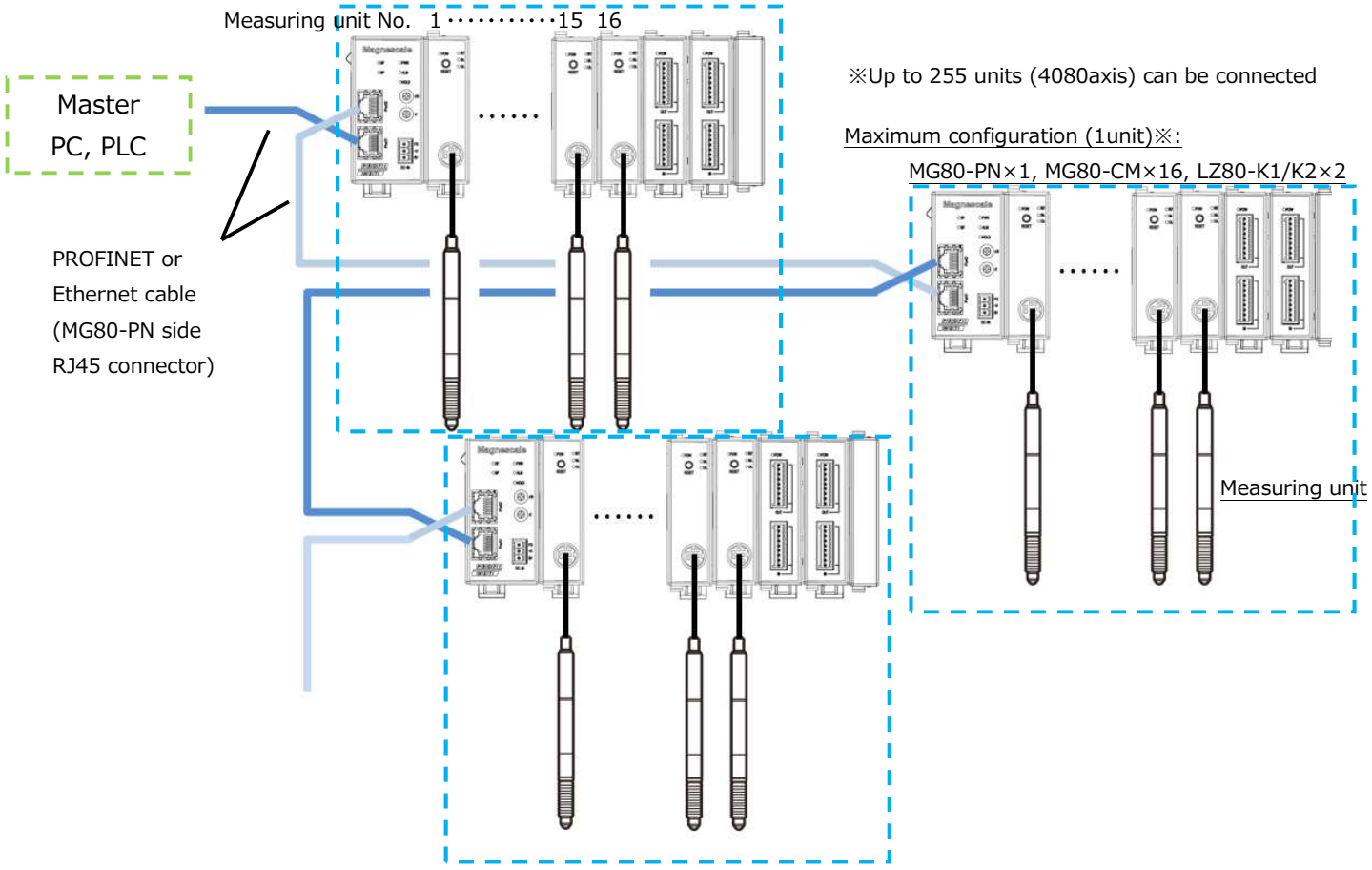
For MG80-PN, MG80-CM and LZ80, refer to the attached instruction manual of each device.
For basic information of PROFINET, refer to the manual of each PLC manufacturer.

# 2. Basic information

In PROFINET, the master device is called a “IO controller” and the slave device is called an “IO devices”.　MG80-PN belongs to IO Devices.
This section describes the connection configuration of MG80-PN and various connected devices.

## 2.1. System configuration

MG80-PN can be connected to a counter module MG80-CM for connecting a measuring unit, and an I/O module LZ80-K1/K2 that can control the operation of the constituent units and external signals.




・Up to 16 counter module MG80-CM can be connected to one MG80-PN.
・Connect the measuring unit DK series to MG80-CM.
・Measuring unit numbers are automatically assigned in order from 1 closest to MG80-PN.
・For PROFINET or Ethernet connection, prepare a shielded cable with RJ45(8P8C) connector. (Both straight and cross cables can be used.)
・The number of connectable units depends on the available number of 1(0x01)to 255(0xFF), in which the lower 1byte of the IP address can be set.
If the IP address can use 1 to 255, maximum 255 units (4080 axes) can be connected.
・Be sure to use Port 1 for PROFINET connection with the master side and host side.

# 3. Setting

## 3.1. Download of setting application and GSDML file

1. Access Magnescale Website and download “Setting application for Windows PC” and “Setting file” (GSDML file). (https://www.magnescale.com) GSDML file can be used regardless of the PLC manufacture and the number of axes used.

2. Save the file in an appropriate location and extract it with decompression software.

## 3.2. About IO data

When the GSDML file is imported into the development environment, the IO data is handled as Byte array data. Please refer to “6. Communication” page of the text for IO data mapping.

## 3.3. Setting various parameters

Various settings of MG80-PN can be performed from PC by using “Setting application for Windows PC”

## 3.3.1. Connection

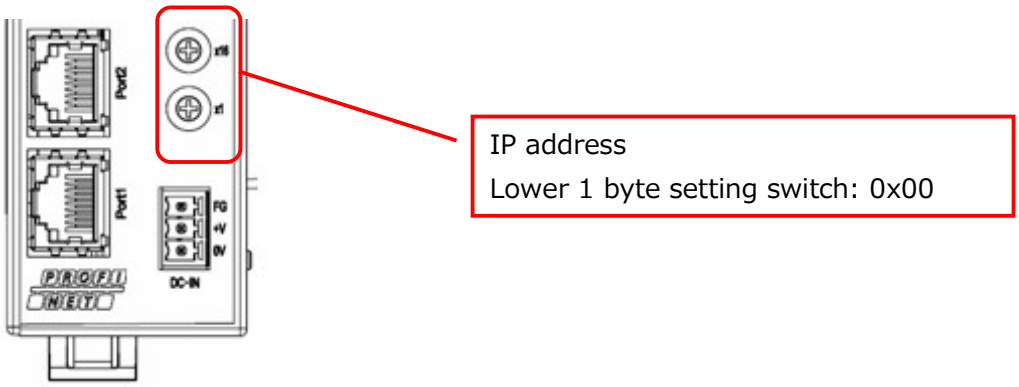
1. Preparation of "setting application for Windows PC"
   Please place the downloaded "MG80SettingTool.exe" file in an arbitrary location.
2. Make the following settings on the PC which “the setting application for Windows PC” is installed.

   IP address : 192.168.100. XXX※1
   Subnet mask : 255.255.255.0

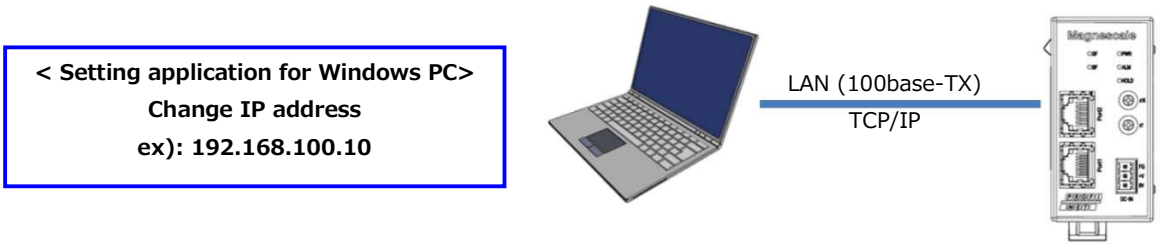
   ※1 Address that cannot be set to XXX
   - “1” that is used when setting with the MG80-PN.
   - Same address as other connected devices.

3. Set the setting switch to “0x00” to enter the setting mode and enable communication with the computer.
   In this case, the IP address is fixed to the following.

   IP address : 192.168.100.1
   Subnet mask : 255.255.255.0



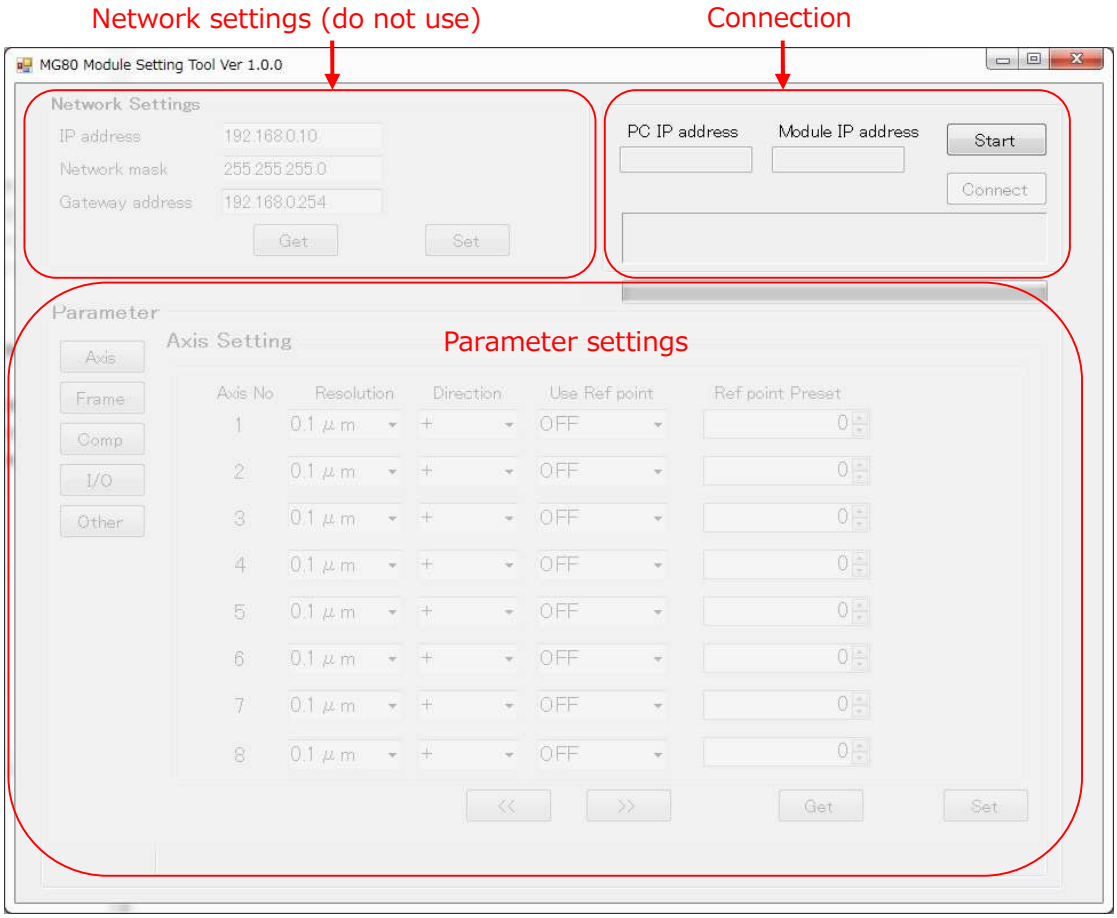

4. Connect the PC which “Setting application for Windows PC”” is installed and MG80-PN directly with Ethernet cable.
   Connect the power supply and turn on the MG80-PN.




5. Click "MG80SettingTool.exe" on the PC on which "Setting application for Windows PC " is installed to start the application.

## 3.3.2. Setting method

Set various operation parameters using the “Setting application for Windows PC”.
“ MG80ModuleSettingTool.” installed on the PC is started, the following screen appears.

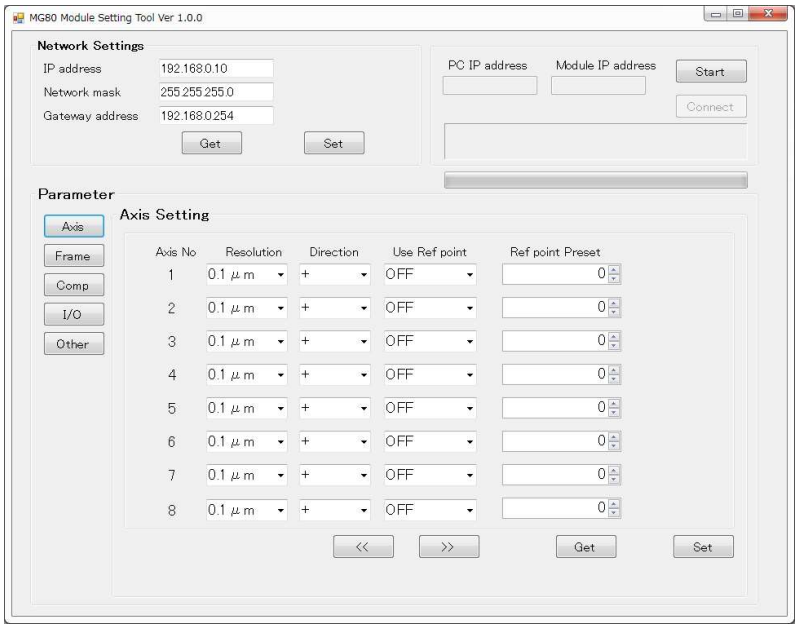


Follow the steps below to connect to the setting application for Windows PC.

1. Click the Start button at the top right of the setting application.


2. Click the Connect button at the top right of the setting application.

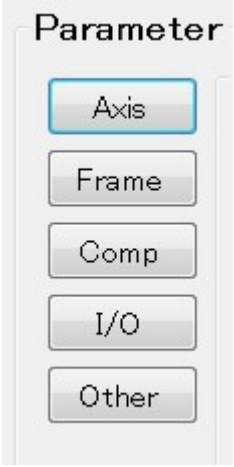

3. If the connection is successful, the network setting field and parameter setting field become valid.




If the connection fails, turn off the power of the MG80-PN and start again from the setting application.

### 3.3.2.1. Measurement parameter setting

Check that the following parameter setting fields are active.
If not, redo the connection procedure described in the previous section.




If there are multiple pages on each parameter screen, switch pages by pressing the page forward buttons.


After setting the parameters on each parameter screen, click the “Set” button at the bottom of the screen to send and save the parameters to MG80-PN

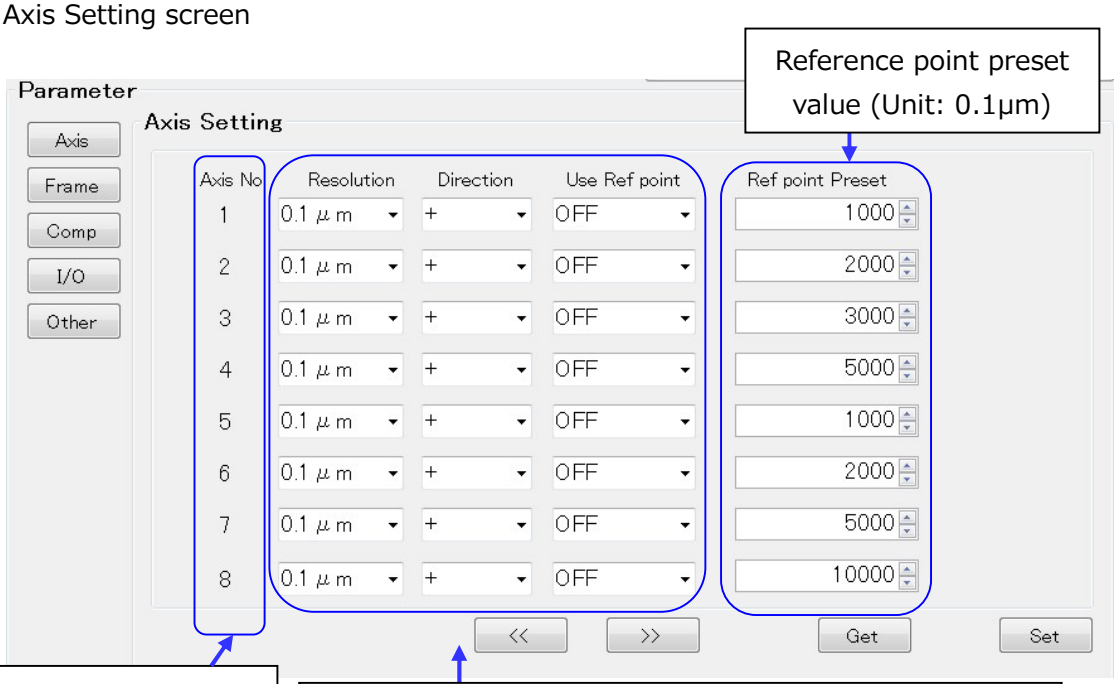
**Note) Make sure to click the “Set” button in each screen, otherwise parameters will not be save in MG80-PN.**


In order to get the parameters currently stored in the MG80-EI, press the “Get” button at the bottom of the screen on each parameter screen.

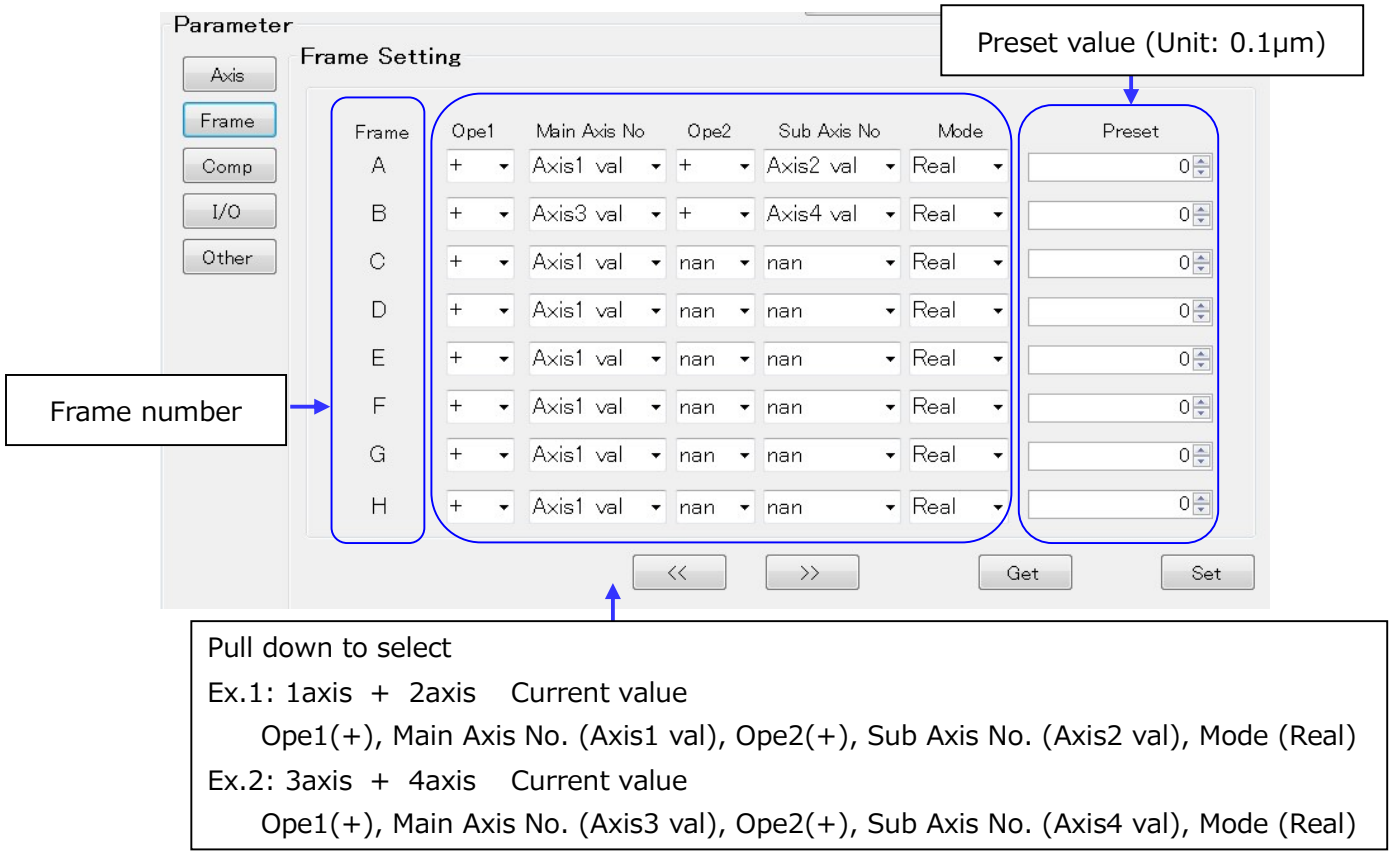
Setting items

| No | Parameters<br>(Parameter name) | Description |
|---|---|---|
| 1 | Axis<br>(Axis Setting) | Setting for connected Measuring device. Enter Resolution, Direction, use of Reference point, and Master preset value of each axis here. |
| 2 | Frame<br>(Frame Setting) | Setting for what data to carry in each Frames. Calculation (Addition, Subtraction) result of selected axis, Output mode, Preset value of each frame. |
| 3 | Comp<br>(Comparator Setting) | Setting for Comparator. Enter Threshold, Steps, Group to apply on the frame. |
| 4 | I/O<br>(I/O Setting) | Setting for I/O terminal function. Enter function to each of the output terminal. |
| 5 | Other<br>(Other Setting) | Settings other than the above items. |

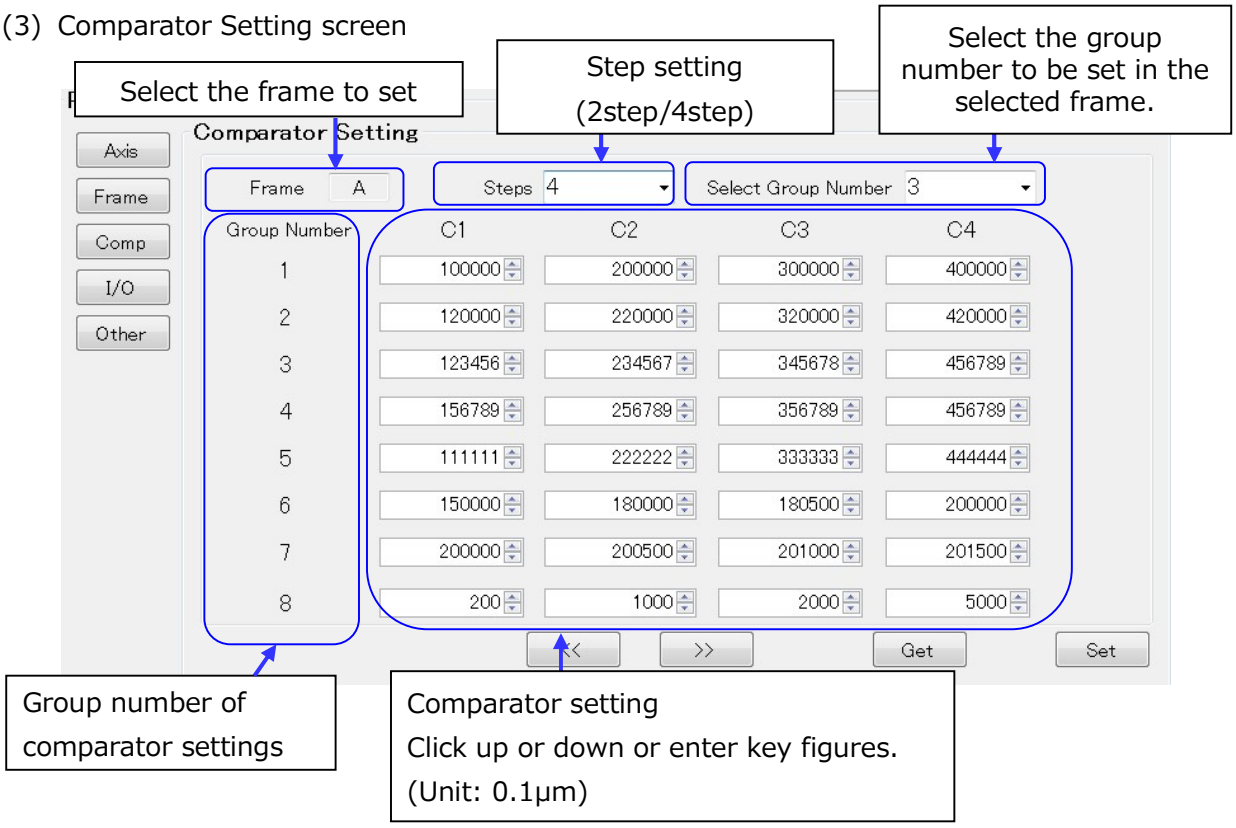
(1) Axis Setting screen



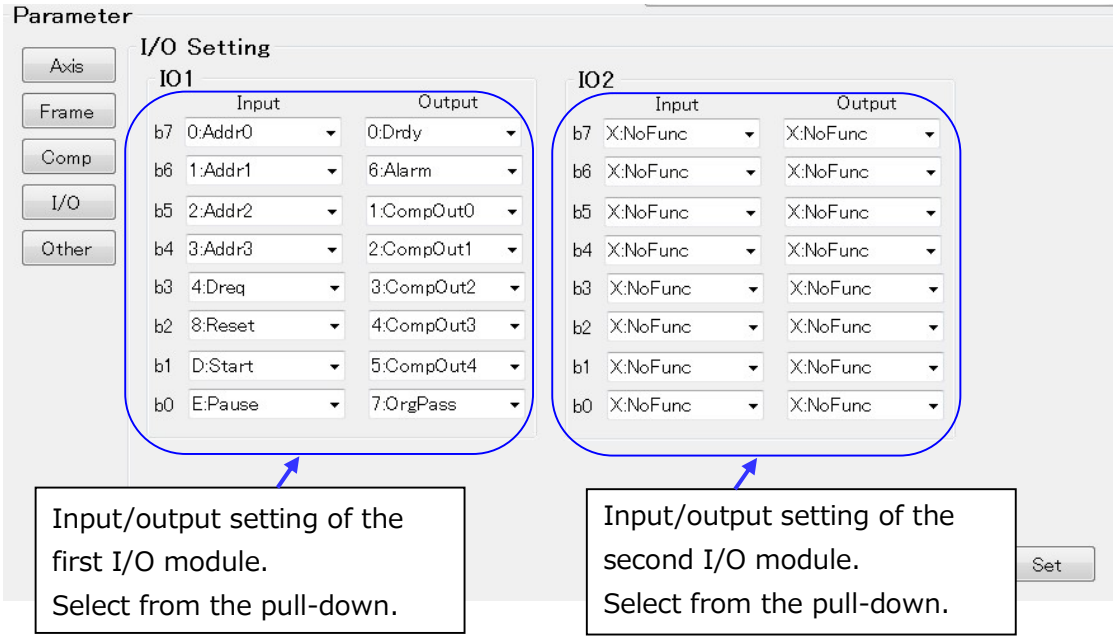

(2) Frame Setting screen



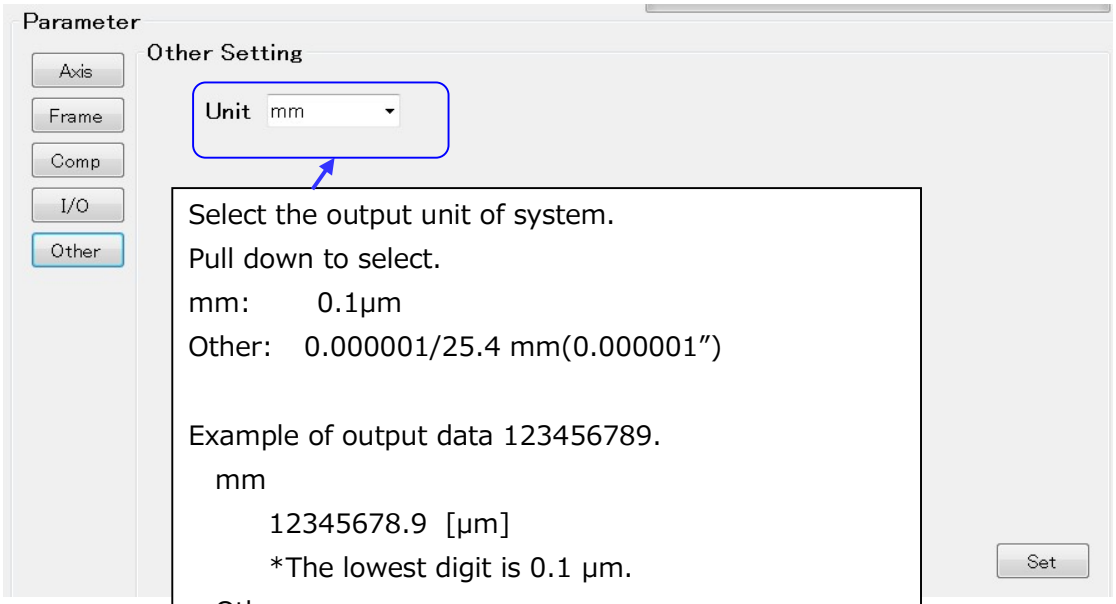
(3) Comparator Setting screen




(4) I/O Setting screen



(5) Other Setting screen




Select the output unit of system.
Pull down to select.
mm: 0.1μm
Other: 0.000001/25.4 mm(0.000001")

Example of output data 123456789.
mm
12345678.9 [μm]
*The lowest digit is 0.1 μm.
Other
123.456789 [1/25.4 mm(")]

This manual is written based on the μm unit setting. If you select "Other", please read 0.1μm unit as 0.000001/25.4 mm (0.000001") unit.

## 3.3.3. Restart MG80-PN

1. After setting and saving all parameters, turn off the power.

2. The IP address used in the actual measurement is set from the PLC, so set a value other than 0x00 with the setting switch on the MG80-PN.

3. Restart the power to operate with the set parameters.

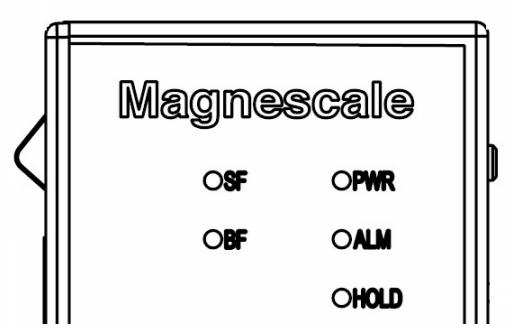
# 4. Specifications

## 4.1. Interface specifications

<table>
<tr><th colspan="3">Item</th><th>Specifications</th></tr>
<tr><td rowspan="2">Switch and Indication</td><td>Switch</td><td>IP address setting</td><td>Setting switch×2 pcs. (Hexadecimal output 8bit)
<table>
<tr><td>Setting value</td><td></td></tr>
<tr><td>0x00</td><td>「Setting mode」<br>IP address is fixed to 192.168.100.1</td></tr>
<tr><td>0x01<br>～<br>0xFF</td><td>"IP address setting at the time of easurement" is set by PLC etc., so set either 0x01 to 0xFF.</td></tr>
</table></td></tr>
<tr><td>Indication</td><td>LED lamp status</td><td>Refer to 4.2 LED indicator</td></tr>
<tr><td rowspan="3">Communi-cation I/F</td><td colspan="2">LAN connector</td><td>RJ-45×2（100BASE-TX）<br>Shielded cable.</td></tr>
<tr><td rowspan="2"></td><td>PROFINET communication</td><td>・Transmits the count value, error status, and calculation result obtained from the measuring unit.<br>・Receives commands from the host device.<br>・The communication standard is the PROFINET specification.</td></tr>
<tr><td>TCP/IP communication</td><td>・When the setting switch is set to “0x00”, the IP address is fixed at 192.168.100.1, and the mode becomes the “Setting mode” for communication by TCP/IP.<br>In “Setting mode”, it can be set the operation parameters using the setting application for Windows PC.</td></tr>
<tr><td>Power</td><td>FG ×1<br>+V ×1<br>0V ×1</td><td>Terminal ×1<br>(3 pole)</td><td>All modules and measuring units connected to MG80-PN are supplied from this power supply terminal.</td></tr>
</table>

# 4.2. LED indicator

The definition of LED display is described below.




[PWR] Power LED : Displays the operation status of this module

| Color | Status | Contents |
|---|---|---|
| Green | Turns off | Power off |
| | Lights up | Ready for operation after power on |

[ALM] Alarm LED : Displays the alarm status of all modules.

| Color | Status | Contents |
|---|---|---|
| Red | Turns off | Normal operation |
| | Lights up | Lights when an alarm occurs on any module. |

[HOLD] Hold LED :Displays Hold status

| Color | Status | Contents |
|---|---|---|
| Orange | Turns off | All count data is released from hold. |
| | Lights up | Any count data is in hold status. |

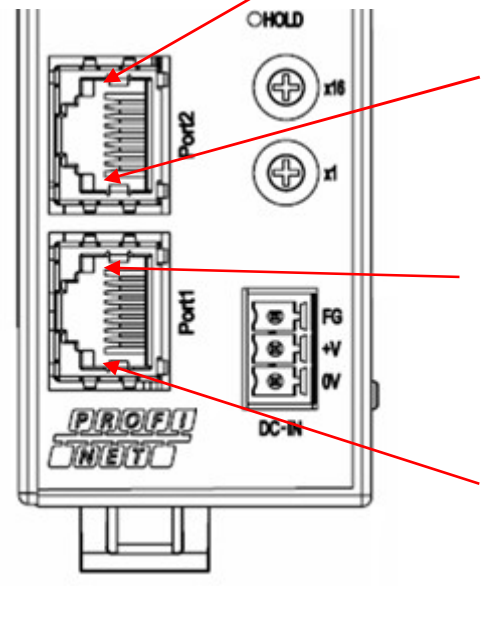
[SF] System Failure LED : Displays the connection status according to the PROFINET standard.

| Color | Status | Contents |
|---|---|---|
| – | Turns off | Power off or communication is not connected |
| Green | Lights up | Communication connection status. |

[BF] Bus Failure LED : Displays the error status according to the PROFINET standard.

| Color | Status | Contents |
|---|---|---|
| – | Turns off | Power off or no communication error |
| Red | Lights up | Communication error occurred. |

Communication port status confirmation LED




Displays the link status of communication port 2

| Color | Status | Description |
|---|---|---|
| Green | Turns off | Link not established |
| | Lights up | Link established |

Displays the link speed of communication port 2

| Color | Status | Description |
|---|---|---|
| Orange | Turns off | Abnormal communication speed |
| | Lights up | Communication speed is normal |

Displays the link status of communication port 1

| Color | Status | Description |
|---|---|---|
| Green | Turns off | Link not established |
| | Lights up | Link established |

Displays the link speed of communication port 1

| Color | Status | Description |
|---|---|---|
| Orange | Turns off | Abnormal communication speed |
| | Lights up | Communication speed is normal |

# 5. Function

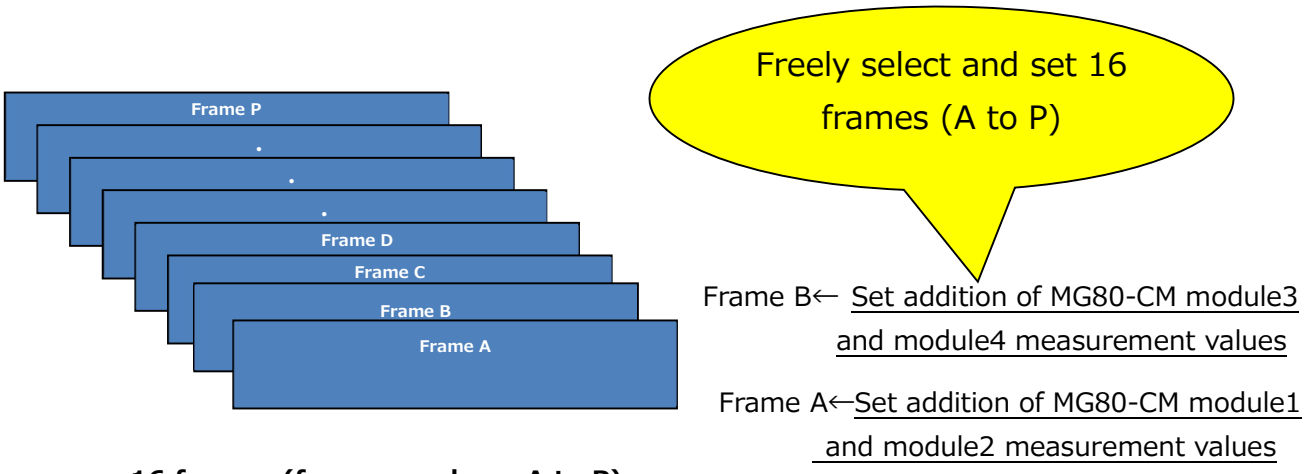
## 5.1. Functions list

| Item / Condition | Contents |
|---|---|
| Module configuration | |
| Whole system | MG80-PN can be expanded to 255 units via PROFINET network (total 4080axes) |
| Number of connectable modules | Counter module MG80-CM : From 1 to 16units (Measuring unit 1 to 16 axes)<br>I/O module LZ80-K1/K2 : Max. 2units |
| Resolution | |
| Measuring unit Input resolution | 0.1μm/0.5μm/1μm/2μm/5μm/10μm |
| Data capture capability | |
| | Max. 8000 data/sec. |
| Data format | Integer type 9 digits<br>※ μm mode: 5 digits for the integer part, 4 digits for the decimal part<br>Other mode : 4 digits for the integer part, 6 digits for the decimal part |
| Peak hold function | Calculate maximum value, minimum value, peak to peak value of each frame |
| | Hold updating peak value during pause period |
| | Start recalculation of peak value by start |
| Output data type | |
| Single axis | Current value, maximum value, minimum value, peak to peak value of each axis |
| Addition and subtraction function | Current value, maximum value, minimum value, peak to peak value of 2-axis add/sub |
| Comparator | Compare the measurement data of each frame※ and output the comparator result. |
| Number of steps | 2 steps／4 steps |
| Number of groups | 8 groups |
| Reset | Reset count value to zero |
| Reference point | When using the reference point of the measuring unit, set the reference point position is use as the reference value |
| Preset | Preset to set value |
| Master preset | Master preset to set value |
| I/O module | The specified function can be assigned to each terminal of the I/O module. Perform the operation according to the assigned terminal function. |

※ **“Frame” is a function that sets the measurerd and calculated values of the measuring unit in a frame, prepared in advance and can be called up with a command. The details are described in 5.2 on the next page.**

# 5.2. Frame definition

A frame is a constituent unit that can be used as an output value by freely selecting the calculated value, current value, peak to peak value, maximum value, and minimum value.
Up to 16 frames can be set for each unit (maximum connection configuration: MG80-PN x1, MG80-CM x 16, LZ80-K1/K2 x2).
Each of the 16 frames is called a frame number from A to P.
Each frame can be read as RT communication of PROFINET.
By setting the output value for each frame in advance, it can be read at any time during measurement.
The following is a setting example.




**16 frames (frame number : A to P)**

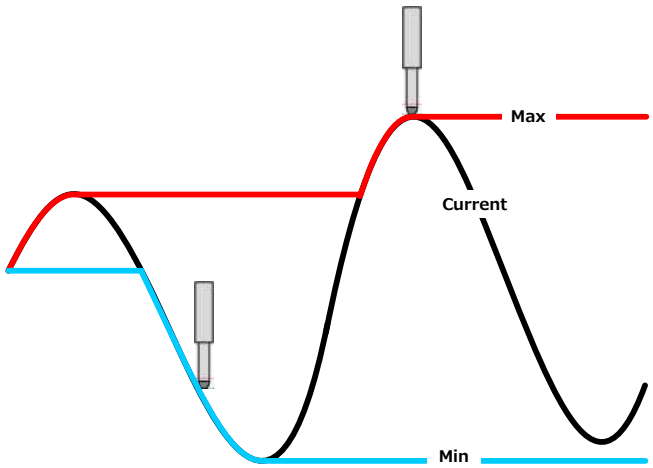
The contents to be output can be freely selected and set in one frame.
The frame setting method can be set as various operation parameters in the Setting application for Windows PC.
The frame can be set freely from 1 to 16 regardless of the number of MG80-CM connections.
For example, the same set contents can be set in multiple frames.

(Note)
-Calculations between different frames, such as adding frame A and frame B, cannot be performed.
-The calculation function can be used only in one unit (MG80-CM connected to MG80-PN).

# 5.3. Detail of function

## 5.3.1. Peak hold

The peak value (maximum value, minimum value, peak to peak value) of each frame is always retained.
An example of calculating the peak value is shown below.
When the measuring unit moves from left to right as shown below, the black line is the current value, red line is max. value and blue line is min. value.




**Operation examples of Peak hold**

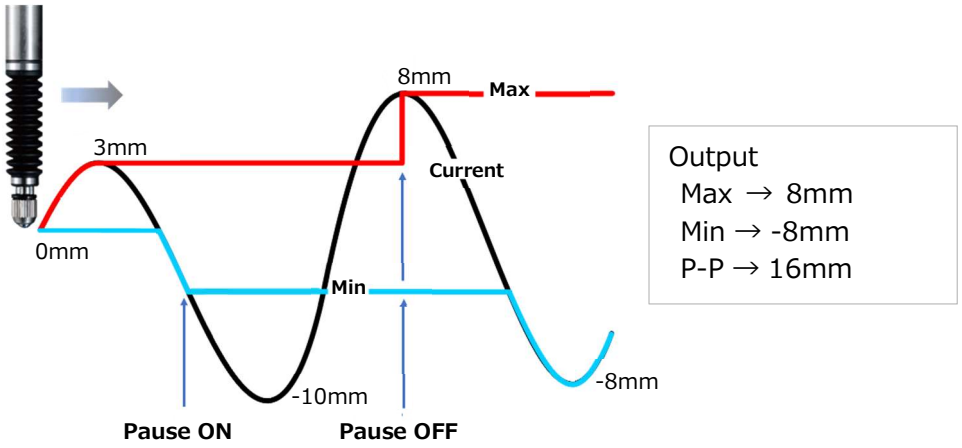
Each time the current value is obtained, the value is updated to satisfy the following conditions and stored in RAM.

Minimum value ≦ Current value ≦ Maximum value

Peak to peak value = Maximum value − Minimum value

## 5.3.2. Pause

Stopps updating the comparator and peak value calculation of a frame with pause function ON. Transition of the pause function of ON/OFF are shown below.




**Example of using Pause function**

## 5.3.3. Start

Starts measuring the peak value of the specified frame.
(Set the current value for the maximum and minimum values, and set zero for the peak to peak value)

## 5.3.4. Reset

Set the measurement value of the specified frame to zero.

## 5.3.5. Preset

Preset the set value.

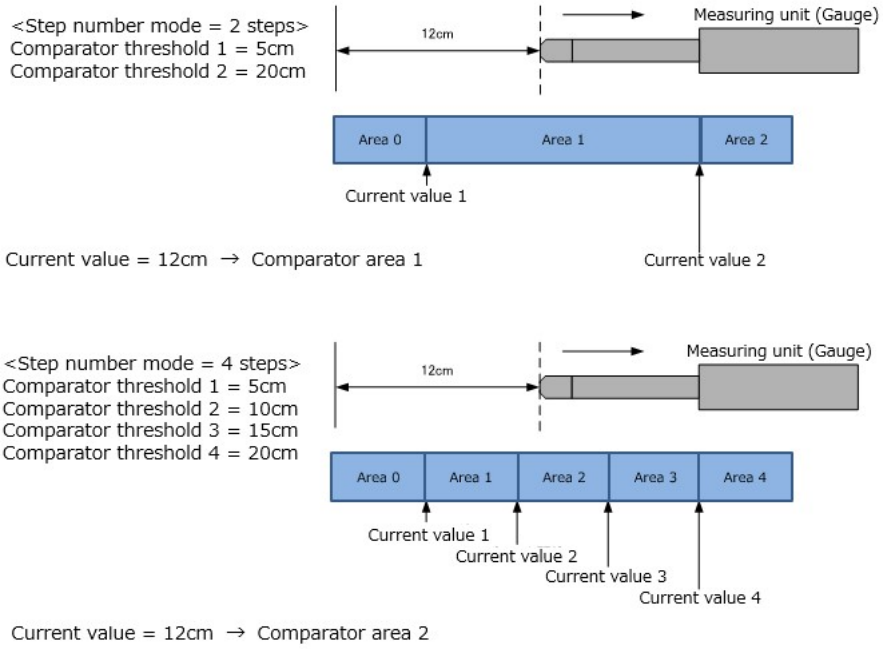
## 5.3.6. Master preset

By using the reference point of the measuring unit, the position can be reproduced as an absolute value when the power is restarted.
The procedure for master preset is as follows.

1. Turn on the master preset function in advance.
2. Turn on the power and pass through the reference point of the measuring unit.
3. Align the measuring unit with the master work to be measured
4. Set the master value using the master value setting command.
   Once this value is set, the reference point will be set automatically after the power is next turned on when move the spindle of the measuring unit and pass through the reference point.

## 5.3.7. Comparator

Up to 8 thresholds can be set for 2 or 4(2 steps / 4 steps) for each set frame.
Outputs the judgment value for each set area.
The set can be specified by the comparator group number setting command.
The following is an example of comparator judgment when setting the number of steps.




**Example of comparator judgment**

## 5.3.8. Add/Sub function

Addition and subtraction of measured values of two measuring units are possible.
The calculation result is output as measurement data (current value) for each frame. Up to 16 frames can be set.

The calculation formula is shown below.
Axis calculation result (current value)
= <Sing1> Measurement value of measuring unit Ⓐ
+ <Sing2> Measurement value of measuring unit Ⓑ
(Example)
Measurement value of measuring unit Ⓐ = 10[μm]
Measurement value of measuring unit Ⓑ = 5[μm]
Calculation setting : Sign1 = +, Sign2 = −
Measured value after calculation(Current value) = (+10) + (−5) = 5[μm]

## 5.3.9. I/O module control

Functions can be assigned to the input and output terminals of the connected I/O module.
According to the signal status of the assigned input terminal, the operation status such as the comparator judgment of the main module can be changed, and the signal output of the output terminal can be controlled.
The function and detailed description are described below.

**Function assignment of input of I/O terminal**

| Function | Contents |
|---|---|
| Target frame number<br>(4bits:Addr0 to Addr3) | Specify the target frame number with the assigned 4 bits.<br>* Target frame number = A to P(4 bits: 0000b to 1111b) |
| Data request input signal<br>(1bit:Dreq) | When this signal is at Low level, the functions assigned to the bits corresponding to each input terminal are executed. |
| Comparator group number<br>(3bits:Comp0 to Comp3) | Specify the comparator group number with the assigned 3 bits.<br>* Comparator group number =1 to 8<br>(The 3 bits to be set are 000b to 111b) |
| Reset<br>(1bit:Reset) | When this signal and the data request input signal are both Low level, the frame specified by the target frame number (Addr0 to Addr3) is reset. |
| Preset<br>(1bit:Preset) | When this signal and the data request input signal are both Low level, preset call is executed for the frame specified by the target frame number (Addr0 to Addr3). |
| Reference point clear<br>(1bit:ResetOrg) | When the digital gauge of the frame indicated by the target frame number is set to use the reference point, the reference point positon clear is executed when this signal and the data request input signal are at Low level. |
| Output mode<br>(2bits:Mode0 to Mode1) | Specify the output mode with the assigned 2 bits.<br>* Output mode<br>00b: Current value<br>01b: Maximum value<br>10b: Minimum value<br>11b: Peak-to-peak value |

| | |
|---|---|
| Start<br>(1bit:Start) | When this signal and the data request input signal are both Low level, the frame specified by the target frame number is started. |
| Pause<br>(1bit:Pause) | When this signal and the data request input signal are both Low level, pause ON is executed for the frame specified by the target frame number. Also, when the data request input signal becomes Low level while this signal is High level, puse OFF is executed for the frame specified by the target frame number. |
| No function<br>(No_Func) | The terminal assigned to this function does not perform any operation. |

**Function assignment of I/O output terminal**

| Function | Contents |
|---|---|
| Data ready output signal<br>(1bit:Drdy) | When this signal is Low level, the output information assingned to each output terminal is output. |
| Comparator area number<br>(5bits:Comp_Out0 to Comp_Out4) | The comparator area number is indicated by the assigned 5 bits. When the above Data ready output signal becomes Low level, the comparator area number is output to the output terminal assigned to this fuction. |
| Alarm occurrence<br>(1bit:Alarm) | The alarm occurrence status is indicated by the assigned 1bit.<br>When the above Data ready output signal becomes Low level, the comparator area number is output to the output terminal assigned to this function. |
| Reference point pass<br>(1bit:Org_pass) | The reference point pass status is indicated by the assigned 1 bit.<br>When the above Data ready output signal becomes Low level, the comaparator area number is output to the output terminal assigned to this function. |
| No function<br>(No_Func) | The terminal assigned to this fuction does not perform any operation. |

* Output signal are output when the data request input signal is Low level.

# 6. Communication

## 6.1. Communication with PROFINET device（IO controller)

MG80-PN supports PROFINET standard communication, and has the following RT communication (real time) and NRT communication (Non Real-time) service functions.

### 6.1.1. RT communication（Real-time communication)

MG80-PN supports RT communication of PROFINET standard and performs Real-time communication with the IO controller (PROFINET master PLC).
The communication cycle should be set to a value of 2 ms or more.

**IO data (Output) structure details (34 byte)**

| Type | Offset | | Variable type | Label | Remarks |
|---|---|---|---|---|---|
| | byte | bit | | | |
| Output | 0 | 0 | BOOL | IF1.ST2.BW_QuitChannel_A | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST2.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST2.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 1 | 0 | BOOL | IF1.ST2.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 2 | 0 | BOOL | IF1.ST3.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST3.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST3.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 3 | 0 | BOOL | IF1.ST3.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 4 | 0 | BOOL | IF1.ST4.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST4.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST4.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 5 | 0 | BOOL | IF1.ST4.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 6 | 0 | BOOL | IF1.ST5.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST5.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST5.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 7 | 0 | BOOL | IF1.ST5.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 8 | 0 | BOOL | IF1.ST6.BW_QuitChannel_A | |

| | | | | | |
|---|---|---|---|---|---|
| | | 1 | BOOL | IF1.ST6.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST6.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 9 | 0 | BOOL | IF1.ST6.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 10 | 0 | BOOL | IF1.ST7.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST7.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST7.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 11 | 0 | BOOL | IF1.ST7.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 12 | 0 | BOOL | IF1.ST8.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST8.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST8.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 13 | 0 | BOOL | IF1.ST8.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 14 | 0 | BOOL | IF1.ST9.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST9.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST9.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 15 | 0 | BOOL | IF1.ST9.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 16 | 0 | BOOL | IF1.ST10.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST10.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST10.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 17 | 0 | BOOL | IF1.ST10.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 18 | 0 | BOOL | IF1.ST11.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST11.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST11.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 19 | 0 | BOOL | IF1.ST11.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 20 | 0 | BOOL | IF1.ST12.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST12.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST12.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 21 | 0 | BOOL | IF1.ST12.Encoder01Reset | |

| | | | | | |
|---|---|---|---|---|---|
| | | 1～7 | – | – | |
| | 22 | 0 | BOOL | IF1.ST13.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST13.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST13.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 23 | 0 | BOOL | IF1.ST13.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 24 | 0 | BOOL | IF1.ST14.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST14.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST14.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 25 | 0 | BOOL | IF1.ST14.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 26 | 0 | BOOL | IF1.ST15.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST15.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST15.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 27 | 0 | BOOL | IF1.ST15.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 28 | 0 | BOOL | IF1.ST16.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST16.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST16.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 29 | 0 | BOOL | IF1.ST16.Encoder01Reset | |
| | | 1～7 | – | Reserved | |
| | 30 | 0 | BOOL | IF1.ST17.BW_QuitChannel_A | |
| | | 1 | BOOL | IF1.ST17.BW_QuitChannel_B | |
| | | 2 | BOOL | IF1.ST17.BW_QuitChannel_R | |
| | | 3～7 | – | – | |
| | 31 | 0 | BOOL | IF1.ST17.Encoder01Reset | |
| | | 1～7 | – | – | |
| | 32 | 0 | BOOL | IF1.STxx.Ref | |
| | | 1 | BOOL | IF1.STxx.Preset | |
| | | 2 | BOOL | IF1.STxx.Trig | |
| | | 3 | BOOL | IF1.STxx.Start | |
| | | 4 | BOOL | IF1.STxx.Pause | |
| | | 5 | BOOL | IF1.STxx.Rsv1 | Reserve 1. Outputs zero |
| | | 6 | BOOL | IF1.STxx.Rsv2 | Reserve 2. Outputs zero |
| | | 7 | BOOL | IF1.STxx.Rsv3 | Reserve 3. Outputs zero |
| | 33 | 0 | BOOL | IF1.STxx.Rsv4 | Reserve 4. Outputs zero |
| | | 1～7 | – | – | Unused. Outputs zero |

**IO data (Input) structure details (202 byte)**

| Type | Offset | | Variable type | Label | Remarks |
|---|---|---|---|---|---|
| | Byte | Bit | | | |
| Input | 0～3 | 0～7 | DINT | IF1.ST2.Encoder01 | Frame A measured value |
| | 4～7 | 0～7 | DINT | IF1.ST3.Encoder01 | Frame B measured value |
| | 8～11 | 0～7 | DINT | IF1.ST4.Encoder01 | Frame C measured value |
| | 12～15 | 0～7 | DINT | IF1.ST5.Encoder01 | Frame D measured value |
| | 16～19 | 0～7 | DINT | IF1.ST6.Encoder01 | Frame E measured value |
| | 20～23 | 0～7 | DINT | IF1.ST7.Encoder01 | Frame F measured value |
| | 24～27 | 0～7 | DINT | IF1.ST8.Encoder01 | Frame G measured value |
| | 28～31 | 0～7 | DINT | IF1.ST9.Encoder01 | Frame H measured value |
| | 32～35 | 0～7 | DINT | IF1.ST10.Encoder01 | Frame I measured value |
| | 36～39 | 0～7 | DINT | IF1.ST11.Encoder01 | Frame J measured value |
| | 40～43 | 0～7 | DINT | IF1.ST12.Encoder01 | Frame K measured value |
| | 44～47 | 0～7 | DINT | IF1.ST13.Encoder01 | Frame L measured value |
| | 48～51 | 0～7 | DINT | IF1.ST14.Encoder01 | Frame M measured value |
| | 52～55 | 0～7 | DINT | IF1.ST15.Encoder01 | Frame N measured value |
| | 56～59 | 0～7 | DINT | IF1.ST16.Encoder01 | Frame O measured value |
| | 60～63 | 0～7 | DINT | IF1.ST17.Encoder01 | Frame P measured value |
| | 64 | 0 | BOOL | IF1.ST1.StatusInput01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST1.StatusInput02 | |
| | | 2～7 | – | – | |
| | 65 | 0～7 | SINT | IF1.ST1.SupplyCurrent | |
| | 66 | 0～7 | SINT | IF1.ST1.SupplyVoltage | |
| | 67 | 0 | BOOL | IF1.ST2.PowerSupply01 | |
| | | 1 | BOOL | IF1.ST2.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 68 | 0 | BOOL | IF1.ST2.BW_Channel_A | A signal of axis 1 |
| | | 1 | BOOL | IF1.ST2.BW_Channel_B | B signal of axis 1 |
| | | 2 | BOOL | IF1.ST2.BW_Channel_R | Z signal of axis 1 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 69 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST2.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST2.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 70 | 0 | BOOL | IF1.ST3.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST3.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 71 | 0 | BOOL | IF1.ST3.BW_Channel_A | A signal of axis 2 |
| | | 1 | BOOL | IF1.ST3.BW_Channel_B | B signal of axis 2 |

| | | | | | |
|---|---|---|---|---|---|
| | | 2 | BOOL | IF1.ST3.BW_Channel_R | Z signal of axis 2 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 72 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST3.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST3.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 73 | 0 | BOOL | IF1.ST4.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST4.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 74 | 0 | BOOL | IF1.ST4.BW_Channel_A | A signal of axis 3 |
| | | 1 | BOOL | IF1.ST4.BW_Channel_B | B signal of axis 3 |
| | | 2 | BOOL | IF1.ST4.BW_Channel_R | Z signal of axis 3 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 75 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST4.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST4.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 76 | 0 | BOOL | IF1.ST5.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST5.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 77 | 0 | BOOL | IF1.ST5.BW_Channel_A | A signal of axis 4 |
| | | 1 | BOOL | IF1.ST5.BW_Channel_B | B signal of axis 4 |
| | | 2 | BOOL | IF1.ST5.BW_Channel_R | Z signal of axis 4 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 78 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST5.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST5.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 79 | 0 | BOOL | IF1.ST6.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST6.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 80 | 0 | BOOL | IF1.ST6.BW_Channel_A | A signal of axis 5 |
| | | 1 | BOOL | IF1.ST6.BW_Channel_B | B signal of axis 5 |
| | | 2 | BOOL | IF1.ST6.BW_Channel_R | Z signal of axis 5 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 81 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST6.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST6.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 82 | 0 | BOOL | IF1.ST7.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST7.PowerSupply02 | |

| | | | | | |
|---|---|---|---|---|---|
| | | 2～7 | – | – | |
| | 83 | 0 | BOOL | IF1.ST7.BW_Channel_A | A signal of axis 6 |
| | | 1 | BOOL | IF1.ST7.BW_Channel_B | B signal of axis 6 |
| | | 2 | BOOL | IF1.ST7.BW_Channel_R | Z signal of axis 6 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 84 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST7.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST7.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 85 | 0 | BOOL | IF1.ST8.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST8.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 86 | 0 | BOOL | IF1.ST8.BW_Channel_A | A signal of axis 7 |
| | | 1 | BOOL | IF1.ST8.BW_Channel_B | B signal of axis 7 |
| | | 2 | BOOL | IF1.ST8.BW_Channel_R | Z signal of axis 7 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 87 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST8.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST8.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 88 | 0 | BOOL | IF1.ST9.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST9.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 89 | 0 | BOOL | IF1.ST9.BW_Channel_A | A signal of axis 8 |
| | | 1 | BOOL | IF1.ST9.BW_Channel_B | B signal of axis 8 |
| | | 2 | BOOL | IF1.ST9.BW_Channel_R | Z signal of axis 8 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 90 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST9.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST9.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 91 | 0 | BOOL | IF1.ST10.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST10.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 92 | 0 | BOOL | IF1.ST10.BW_Channel_A | A signal of axis 9 |
| | | 1 | BOOL | IF1.ST10.BW_Channel_B | B signal of axis 9 |
| | | 2 | BOOL | IF1.ST10.BW_Channel_R | Z signal of axis 9 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 93 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST10.DigitalInput01 | |

| | | | | | |
|---|---|---|---|---|---|
| | | 5 | BOOL | IF1.ST10.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 94 | 0 | BOOL | IF1.ST11.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST11.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 95 | 0 | BOOL | IF1.ST11.BW_Channel_A | A signal of axis 10 |
| | | 1 | BOOL | IF1.ST11.BW_Channel_B | B signal of axis 10 |
| | | 2 | BOOL | IF1.ST11.BW_Channel_R | Z signal of axis 10 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 96 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST11.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST11.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 97 | 0 | BOOL | IF1.ST12.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST12.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 98 | 0 | BOOL | IF1.ST12.BW_Channel_A | A signal of axis 11 |
| | | 1 | BOOL | IF1.ST12.BW_Channel_B | B signal of axis 11 |
| | | 2 | BOOL | IF1.ST12.BW_Channel_R | Z signal of axis 11 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 99 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST12.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST12.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 100 | 0 | BOOL | IF1.ST13.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST13.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 101 | 0 | BOOL | IF1.ST13.BW_Channel_A | A signal of axis 12 |
| | | 1 | BOOL | IF1.ST13.BW_Channel_B | B signal of axis 12 |
| | | 2 | BOOL | IF1.ST13.BW_Channel_R | Z signal of axis 12 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 102 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST13.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST13.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 103 | 0 | BOOL | IF1.ST14.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST14.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 104 | 0 | BOOL | IF1.ST14.BW_Channel_A | A signal of axis 13 |
| | | 1 | BOOL | IF1.ST14.BW_Channel_B | B signal of axis 13 |

| | | | | | |
|---|---|---|---|---|---|
| | | 2 | BOOL | IF1.ST14.BW_Channel_R | Z signal of axis 13 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 105 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST14.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST14.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 106 | 0 | BOOL | IF1.ST15.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST15.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 107 | 0 | BOOL | IF1.ST15.BW_Channel_A | A signal of axis 14 |
| | | 1 | BOOL | IF1.ST15.BW_Channel_B | B signal of axis 14 |
| | | 2 | BOOL | IF1.ST15.BW_Channel_R | Z signal of axis 14 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 108 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST15.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST15.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 109 | 0 | BOOL | IF1.ST16.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST16.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 110 | 0 | BOOL | IF1.ST16.BW_Channel_A | A signal of axis 15 |
| | | 1 | BOOL | IF1.ST16.BW_Channel_B | B signal of axis 15 |
| | | 2 | BOOL | IF1.ST16.BW_Channel_R | Z signal of axis 15 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 111 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST16.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST16.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 112 | 0 | BOOL | IF1.ST17.PowerSupply01 | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 1 | BOOL | IF1.ST17.PowerSupply02 | |
| | | 2～7 | – | – | |
| | 113 | 0 | BOOL | IF1.ST17.BW_Channel_A | A signal of axis 16 |
| | | 1 | BOOL | IF1.ST17.BW_Channel_B | B signal of axis 16 |
| | | 2 | BOOL | IF1.ST17.BW_Channel_R | Z signal of axis 16 |
| | | 3～7 | – | – | Unused Outputs zero |
| | 114 | 0～3 | – | – | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | | 4 | BOOL | IF1.ST17.DigitalInput01 | |
| | | 5 | BOOL | IF1.ST17.DigitalInput02 | |
| | | 6～7 | – | – | |
| | 115 | 0～7 | – | – | Unused Outputs zero |

| | | | | | |
|---|---|---|---|---|---|
| | 116 | 0～7 | SINT | IF1.ST1.ModuleOk | MG70-PN used it, but the MG80-PN outputs zero because it is not used. |
| | 117 | 0～7 | SINT | IF1.ST2.ModuleOk | Status of MG80-CM 1 *See chapter 7.2. |
| | 118 | 0～7 | SINT | IF1.ST3.ModuleOk | Status of MG80-CM 2 *See chapter 7.2. |
| | 119 | 0～7 | SINT | IF1.ST4.ModuleOk | Status of MG80-CM 3 *See chapter 7.2. |
| | 120 | 0～7 | SINT | IF1.ST5.ModuleOk | Status of MG80-CM 4 *See chapter 7.2. |
| | 121 | 0～7 | SINT | IF1.ST6.ModuleOk | Status of MG80-CM 5 *See chapter 7.2. |
| | 122 | 0～7 | SINT | IF1.ST7.ModuleOk | Status of MG80-CM 6 *See chapter 7.2. |
| | 123 | 0～7 | SINT | IF1.ST8.ModuleOk | Status of MG80-CM 7 *See chapter 7.2. |
| | 124 | 0～7 | SINT | IF1.ST9.ModuleOk | Status of MG80-CM 8 *See chapter 7.2. |
| | 125 | 0～7 | SINT | IF1.ST10.ModuleOk | Status of MG80-CM 9 *See chapter 7.2. |
| | 126 | 0～7 | SINT | IF1.ST11.ModuleOk | Status of MG80-CM 10*See chapter 7.2. |
| | 127 | 0～7 | SINT | IF1.ST12.ModuleOk | Status of MG80-CM 11*See chapter 7.2. |
| | 128 | 0～7 | SINT | IF1.ST13.ModuleOk | Status of MG80-CM 12*See chapter 7.2. |
| | 129 | 0～7 | SINT | IF1.ST14.ModuleOk | Status of MG80-CM 13*See chapter 7.2. |
| | 130 | 0～7 | SINT | IF1.ST15.ModuleOk | Status of MG80-CM 14*See chapter 7.2. |
| | 131 | 0～7 | SINT | IF1.ST16.ModuleOk | Status of MG80-CM 15*See chapter 7.2. |
| | 132 | 0～7 | SINT | IF1.ST17.ModuleOk | Status of MG80-CM 16*See chapter 7.2. |
| | 133 | 0～7 | SINT | IF1.ST2.CompResult | Frame A comparator result |
| | 134 | 0～7 | SINT | IF1.ST2.OutKind | Frame A output type |
| | 135 | 0～7 | SINT | IF1.ST2.CompKumiNum | Frame A comparator group number |
| | 136 | 0～7 | SINT | IF1.ST3.CompResult | Frame B comparator result |
| | 137 | 0～7 | SINT | IF1.ST3.OutKind | Frame B output type |
| | 138 | 0～7 | SINT | IF1.ST3.CompKumiNum | Frame B comparator group number |
| | 139 | 0～7 | SINT | IF1.ST4.CompResult | Frame C comparator result |
| | 140 | 0～7 | SINT | IF1.ST4.OutKind | Frame C output type |
| | 141 | 0～7 | SINT | IF1.ST4.CompKumiNum | Frame C comparator group number |
| | 142 | 0～7 | SINT | IF1.ST5.CompResult | Frame D comparator result |
| | 143 | 0～7 | SINT | IF1.ST5.OutKind | Frame D output type |
| | 144 | 0～7 | SINT | IF1.ST5.CompKumiNum | Frame D comparator group number |
| | 145 | 0～7 | SINT | IF1.ST6.CompResult | Frame E comparator result |
| | 146 | 0～7 | SINT | IF1.ST6.OutKind | Frame E output type |
| | 147 | 0～7 | SINT | IF1.ST6.CompKumiNum | Frame E comparator group number |
| | 148 | 0～7 | SINT | IF1.ST7.CompResult | Frame F comparator result |
| | 149 | 0～7 | SINT | IF1.ST7.OutKind | Frame F output type |
| | 150 | 0～7 | SINT | IF1.ST7.CompKumiNum | Frame F comparator group number |
| | 151 | 0～7 | SINT | IF1.ST8.CompResult | Frame G comparator result |
| | 152 | 0～7 | SINT | IF1.ST8.OutKind | Frame G output type |
| | 153 | 0～7 | SINT | IF1.ST8.CompKumiNum | Frame G comparator group number |
| | 154 | 0～7 | SINT | IF1.ST9.CompResult | Frame H comparator result |
| | 155 | 0～7 | SINT | IF1.ST9.OutKind | Frame H output type |

| | | | | | |
|---|---|---|---|---|---|
| | 156 | 0～7 | SINT | IF1.ST9.CompKumiNum | Frame H comparator group number |
| | 157 | 0～7 | SINT | IF1.ST10.CompResult | Frame I comparator result |
| | 158 | 0～7 | SINT | IF1.ST10.OutKind | Frame I output type |
| | 159 | 0～7 | SINT | IF1.ST10.CompKumiNum | Frame I comparator group number |
| | 160 | 0～7 | SINT | IF1.ST11.CompResult | Frame J comparator result |
| | 161 | 0～7 | SINT | IF1.ST11.OutKind | Frame J output type |
| | 162 | 0～7 | SINT | IF1.ST11.CompKumiNum | Frame J comparator group number |
| | 163 | 0～7 | SINT | IF1.ST12.CompResult | Frame K comparator result |
| | 164 | 0～7 | SINT | IF1.ST12.OutKind | Frame K output type |
| | 165 | 0～7 | SINT | IF1.ST12.CompKumiNum | Frame K comparator group number |
| | 166 | 0～7 | SINT | IF1.ST13.CompResult | Frame L comparator result |
| | 167 | 0～7 | SINT | IF1.ST13.OutKind | Frame L output type |
| | 168 | 0～7 | SINT | IF1.ST13.CompKumiNum | Frame L comparator group number |
| | 169 | 0～7 | SINT | IF1.ST14.CompResult | Frame M comparator result |
| | 170 | 0～7 | SINT | IF1.ST14.OutKind | Frame M output type |
| | 171 | 0～7 | SINT | IF1.ST14.CompKumiNum | Frame M comparator group number |
| | 172 | 0～7 | SINT | IF1.ST15.CompResult | Frame N comparator result |
| | 173 | 0～7 | SINT | IF1.ST15.OutKind | Frame N output type |
| | 174 | 0～7 | SINT | IF1.ST15.CompKumiNum | Frame N comparator group number |
| | 175 | 0～7 | SINT | IF1.ST16.CompResult | Frame O comparator result |
| | 176 | 0～7 | SINT | IF1.ST16.OutKind | Frame O output type |
| | 177 | 0～7 | SINT | IF1.ST16.CompKumiNum | Frame O comparator group number |
| | 178 | 0～7 | SINT | IF1.ST17.CompResult | Frame P comparator result |
| | 179 | 0～7 | SINT | IF1.ST17.OutKind | Frame P output type |
| | 180 | 0～7 | SINT | IF1.ST17.CompKumiNum | Frame P comparator group number |
| | 181 | 0～7 | SINT | IF1.STxx.IoIN1 | Input signal of I/O module 1 |
| | 182 | 0～7 | SINT | IF1.STxx.IoOUT1 | Output signal of I/O module 1 |
| | 183 | 0～7 | SINT | IF1.STxx.IoIN2 | Input signal of I/O module 2 |
| | 184 | 0～7 | SINT | IF1.STxx.IoOUT2 | Output signal of I/O module 2 |
| | 185～188 | 0～7 | DINT | IF1.ST5.LatchNum | Unused Outputs zero |
| | 189～192 | 0～7 | DINT | IF1.ST5.EncCount | Unused Outputs zero |
| | 193 | 0～7 | SINT | IF1.ST5.LatchStatus | Unused Outputs zero |
| | 194～197 | 0～7 | DINT | Reserved | Unused Outputs zero |
| | 198～201 | 0～7 | DINT | Reserved | Unused Outputs zero |

### 6.1.2. NRT communication (Non Real-time communication)

MG80-PN can perform NRT command communication (Non Real-time communication) with a master (PLC of PROFINET device) at any timing. Commands such as measurement parameter change and reset are performed by NRT command communication.

The index number for NRT communication is “16”.
The `WRREC` and `RDREC` instructions can be used to perform NRT communication in the `Step7` PLC programming tool from Siemens. In this product, the `INDEX: data record number` of the WRREC or RDREC instruction should be set to “16”.

The data structure of the send command is shown below.

**Data structure of command transmission**

| Offset | Label | Item | Description |
|---|---|---|---|
| 0 | INC | Transmission count | Each time a command is sent, a value of +1 is set. |
| 1 | CMD | Command number | Set the command number (Hex value) to be sent.<br>*Refer to the NRT communication command list for details. |
| 2 | RSV1 | Reserved | Unused, it is set to zero. |
| 3 | RSV2 | Reserved | Unused, it is set to zero. |
| 4～15 | DATA1<br>～<br>DATA12 | Transmission data | 12 byte of transmission data<br>*The description of the transmission data changed due to the command to be transmitted.<br>The dummy part is filled with zeros.<br>For details, refer to 6.1.3. NRT communication command list. |

The response data is 4 bytes of header information plus 16 bytes of response data.
The following shows the response data structure.

**Response data structure**

| Offset | Label | Item | Description |
|---|---|---|---|
| 0～3 | HEAD | Header information | 4-byte NRT header information |
| 4～19 | DATA1<br>～<br>DATA16 | Response data | 16-byte response data<br>*The description of the transmission data changed due to the command to be transmitted.<br>The dummy part is filled with zeros. |

The procedure for sending a command is as follows.
(1) Send the command
(2) Read the response data of the command

A wait time is required between each command transmission.
(1) -> (2)
The following commands require 200ms.
Command Number 8(0x08) Reference point position clear instruction
Command Number 27(0x1B) Master preset call instruction
Command Number 57(0x39) Unit setting
Command Number 62(0x3E) Parameter save instruction
Other than the above commands, 2ms is required.

(2) -> (1) (when sending the next command in succession)
Always 2ms is required.

## 6.1.3. NRT communication command list

The following is a NRT communication command list.

**NRT communication command list**

| Command number | Command | Overview |
|---|---|---|
| 4(0x04) | Input resolution setting | [Axis number]、[Sign]、[Input resolution setting value] |
| 5(0x05) | Input resolution acquisition | [Axis number] |
| 6(0x06) | Reference point use setting | [Axis number]、[Reference point use setting] |
| 7(0x07) | Reference point use setting acquisition | [Axis number] |
| 8(0x08) | Reference point clear instruction | [Axis number] |
| 9(0x09) | Axis calculation setting | [Frame number]、[Sign]、[Measurement value of measuring unit Ⓐ number]、[Sign]、[Measurement value of measuring unit Ⓑnumber] |
| 10(0x0A) | Axis calculation acquisition | [Frame number] |
| 11(0x0B) | Output type setting | [Frame number]、[Output type setting] |
| 12(0x0C) | Output type acquisition | [Frame number] |
| 13(0x0D) | Comparator group number setting | [Frame number]、[Comparator group number setting] |
| 14(0x0E) | Comparator group number acquisition | [Frame number] |
| 15(0x0F) | Comparator step number mode setting | [Frame number]、[Comparator step number mode setting] |
| 16(0x10) | Comparator step number mode acquisition | [Frame number] |
| 17(0x11) | Comparator threshold setting | [Frame number]、[Group number]、[Step number]、[Comparator threshold setting] |
| 18(0x12) | Comparator threshold acquisition | [Frame number]、[Group number]、[Step number] |
| 19(0x13) | I / O function assignment setting | [Target IO number]、[Input/output identification]、[Terminal number]、[Input or output function setting] |
| 20(0x14) | I / O function assignment acquisition | [Target IO number]、[Input/output identification]、[Terminal number] |
| 21(0x15) | Reset instruction | [Frame number] |
| 22(0x16) | Preset value setting | [Frame number]、[Preset value setting] |
| 23(0x17) | Preset value acquisition | [Frame number] |
| 24(0x18) | Preset call instruction | [Frame number] |
| 25(0x19) | Master preset value setting | [Axis number]、[Master preset value setting] |
| 26(0x1A) | Master preset value acquisition | [Axis number] |
| 27(0x1B) | Master preset call instruction | [Axis number] |
| 31(0x1F) | Start instruction | [Frame number] |
| 32(0x20) | Pause ON / OFF setting | [Frame number]、[Pause ON / OFF setting] |
| 33(0x21) | Pause ON / OFF acquisition | [Frame number] |
| 57(0x39) | Unit setting | [Unit setting] |
| 58(0x3A) | Unit acquisition | – |
| 62(0x3E) | Parameter save instruction | – |
| 63(0x3F) | Parameter initialization instruction | – |

The following shows the details of the NRT communication command.

(1) Input resolution setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x04</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Axis number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Sign</th><th>Setting value (Hex)</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Input resolution</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’ : 0.1μm</td><td>0x31</td></tr>
<tr><td>‘2’ : 0.5μm</td><td>0x32</td></tr>
<tr><td>‘3’ : 1.0μm</td><td>0x33</td></tr>
<tr><td>‘4’ : 2.0μm</td><td>0x34</td></tr>
<tr><td>‘5’ : 5.0μm</td><td>0x35</td></tr>
<tr><td>‘6’ : 10.0μm</td><td>0x36</td></tr>
</table></td></tr>
<tr><td>7～15</td><td>DATA4<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x04</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5<br>～<br>DATA9</td><td>Success or failure of setting　※ASCII code<br><table><tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr><tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr></table></td></tr>
<tr><td>13～19</td><td>DATA10<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(2) Input resolution acquisition command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x05 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : * * |
| 5 | DATA2 | CMD : 0x05 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8 | DATA5 | Axis number ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 9 | DATA6 | Sign ※ASCII code<br>Setting: Setting value (Hex)<br>'+': 0x2B<br>'－': 0x2D |
| 10 | DATA7 | Input resolution ※ASCII code<br>Setting: Setting value (Hex)<br>'1' : 0.1μm: 0x31<br>'2' : 0.5μm: 0x32<br>'3' : 1.0μm: 0x33<br>'4' : 2.0μm: 0x34<br>'5' : 5.0μm: 0x35<br>'6' : 10.0μm: 0x36 |
| 11～19 | DATA8<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(3) Reference point use setting command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x06 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 5 | DATA2 | ※ASCII code<br>Use reference point: Setting value (Hex)<br>'0' : OFF: 0x30<br>'1' : ON: 0x31 |
| 6～15 | DATA3<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : * * |
| 5 | DATA2 | CMD : 0x06 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting ※ASCII code<br>Data: Value (Hex): Contents<br>"OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(4) Reference point use acquisition command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x07 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x07 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8 | DATA5 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 9 | DATA6 | ※ASCII code<br>Reference point use: Setting value (Hex)<br>'0' : OFF: 0x30<br>'1' : ON: 0x31 |
| 10～19 | DATA7<br>～<br>DATA16 | ダミー<br>0x00 |

*See chapter 6.1.4. for error information.

(5) Reference position clear instruction command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x08 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | Axis number※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : * * |
| 5 | DATA2 | CMD : 0x08 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting ※ASCII code<br>Data / Value (Hex) / Contents<br>"OK000" / 0x4F 0x4B 0x30 0x30 0x30 / Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(6) Axis calculation setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x09</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Sign1</th><th>Setting value (Hex)</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Measurement value of measuring unit Ⓐ</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>7</td><td>DATA4</td><td>※ASCII code
<table>
<tr><th>Sign2</th><th>Setting value (Hex)</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
<tr><td>‘ ’</td><td>0x20</td></tr>
</table>
To set the measuring unit Ⓐ only<br>(measuring unit Ⓑdisabled), leave the Sign2 blank (0x20).</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Measurement value of measuring unit Ⓑ</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>9～15</td><td>DATA6<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x09</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5<br>～<br>DATA9</td><td>Success or failure of setting　※ASCII code<br><table><tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr><tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr></table></td></tr>
<tr><td>13～19</td><td>DATA10<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(7) Axis calculation acquisition command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x0A</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5～15</td><td>DATA2<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x0A</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>9</td><td>DATA6</td><td>※ASCII code
<table>
<tr><th>Sign1</th><th>Hex値</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
</table></td></tr>
<tr><td>10</td><td>DATA7</td><td>※ASCII code
<table>
<tr><th>Measurement value of measuring unit Ⓐ</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>11</td><td>DATA8</td><td>※ASCII code
<table>
<tr><th>Sign2</th><th>Setting value (Hex)</th></tr>
<tr><td>‘+’</td><td>0x2B</td></tr>
<tr><td>‘−’</td><td>0x2D</td></tr>
<tr><td>‘ ’</td><td>0x20</td></tr>
</table>
To set the measuring unit Ⓐ only<br>(measuring unit Ⓑdisabled), leave the Sign2 blank (0x20).</td></tr>
<tr><td>12</td><td>DATA9</td><td>※ASCII code
<table>
<tr><th>Measurement value of measuring unit Ⓑ</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’～’10’</td><td>0x30～0x39</td></tr>
<tr><td>‘11’～’16’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>13～19</td><td>DATA10<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(8) Output type setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x0B</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Output type</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : Current values</td><td>0x30</td></tr>
<tr><td>‘1’ : Maximum values</td><td>0x31</td></tr>
<tr><td>‘2’ : Minimum values</td><td>0x32</td></tr>
<tr><td>‘3’ : Peak to peak values</td><td>0x33</td></tr>
</table>
The output data of the MG70-PN are number of pulses collected from the measuring unit.<br>In order to convert those into current values, calculation was needed in the program.<br>Current values = number of pulses× sensor resolution<br>Output from MG80-PN is measurement value.<br>It is necessary to remove the calculation program when replacing MG70-PN to MG80-PN.</td></tr>
<tr><td>6～15</td><td>DATA3<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x0B</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5<br>～<br>DATA9</td><td>Success or failure of setting　※ASCII code<br><table><tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr><tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr></table></td></tr>
<tr><td>13～19</td><td>DATA10<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(9) Output type acquisition command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x0C |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x0C |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8 | DATA5 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 9 | DATA6 | ※ASCII code<br>Output Mode: Setting value (Hex)<br>'0' : Current values: 0x30<br>'1' : Maximum values: 0x31<br>'2' : Minimum values: 0x32<br>'3' : Peak to peak values: 0x33 |
| 10～19 | DATA7<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(10) Comparator group number setting command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x0D |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5 | DATA2 | ※ASCII code<br>Comparator group number: Setting value (Hex)<br>'1': 0x31<br>'2': 0x32<br>'3': 0x33<br>'4': 0x34<br>'5': 0x35<br>'6': 0x36<br>'7': 0x37<br>'8': 0x38 |
| 6～15 | DATA3<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : * * |
| 5 | DATA2 | CMD : 0x0D |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting ※ASCII code<br>Data: Value (Hex): Contents<br>"OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(11)　Comparator group number acquisition command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x0E |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x0E |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8 | DATA5 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 9 | DATA6 | ※ASCII code<br>Comparator group number: Setting value (Hex)<br>'1': 0x31<br>'2': 0x32<br>'3': 0x33<br>'4': 0x34<br>'5': 0x35<br>'6': 0x36<br>'7': 0x37<br>'8': 0x38 |
| 10～19 | DATA7<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(12)　Comparator step number mode setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x0F</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Comparator step number mode number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : 0 steps</td><td>0x30</td></tr>
<tr><td>‘2’ : 2 steps</td><td>0x32</td></tr>
<tr><td>‘4’ : 4 steps</td><td>0x34</td></tr>
</table></td></tr>
<tr><td>6～15</td><td>DATA3<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x0F</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5<br>～<br>DATA9</td><td>Success or failure of setting　※ASCII code
<table>
<tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr>
<tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr>
</table></td></tr>
<tr><td>13～19</td><td>DATA10<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(13)　Comparator step number mode acquisition command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x10</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5～15</td><td>DATA2<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x10</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>9</td><td>DATA6</td><td>※ASCII code
<table>
<tr><th>Comparator step number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : 0 steps</td><td>0x30</td></tr>
<tr><td>‘2’ : 2 steps</td><td>0x32</td></tr>
<tr><td>‘4’ : 4 steps</td><td>0x34</td></tr>
</table></td></tr>
<tr><td>10～19</td><td>DATA7<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

## (14) Comparator threshold setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x11</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Comparator group number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
<tr><td>‘8’</td><td>0x38</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Comparator step number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
</table></td></tr>
<tr><td>7<br>～<br>10</td><td>DATA4<br>～<br>DATA7</td><td>Comparator threshold<br>※0.1μm unit(4Byte integer)<br><br>(Example)<br>＋0.1μm → ＋1 (0x01)<br>－0.1μm → －1 (0xFFFFFFFF)<br><br>＋12.3456mm → ＋123456 (0x19C53)<br>－12.3456mm → －123456 (0xFFFE1DC0)</td></tr>
<tr><td>11～15</td><td>DATA8<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x11</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5<br>～<br>DATA9</td><td>Success or failure of setting　※ASCII code<br><table><tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr><tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr></table></td></tr>
<tr><td>13～19</td><td>DATA10<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

## (15) Comparator threshold acquisition command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x12</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Comparator group number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
<tr><td>‘8’</td><td>0x38</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Comparator step number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
</table></td></tr>
<tr><td>7～15</td><td>DATA4<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x12</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Frame number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘A’～’J’</td><td>0x30～0x39</td></tr>
<tr><td>‘K’～’P’</td><td>0x41～0x46</td></tr>
</table></td></tr>
<tr><td>9</td><td>DATA6</td><td>※ASCII code
<table>
<tr><th>Comparator group number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
<tr><td>‘8’</td><td>0x38</td></tr>
</table></td></tr>
<tr><td>10</td><td>DATA7</td><td>※ASCII code
<table>
<tr><th>Comparator step number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
</table></td></tr>
<tr><td>11～14</td><td>DATA8<br>～<br>DATA11</td><td>Comparator threshold value<br>※ 0.1μm unit(4Byte integer)<br><br>(Example)<br>＋0.1μm → ＋1 (0x01)<br>－0.1μm → －1 (0xFFFFFFFF)</td></tr>
<tr><td>15～19</td><td>DATA12<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

## (16) I/O function assignment setting command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x13</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>Target I / O module number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : IO1</td><td>0x30</td></tr>
<tr><td>‘1’ : IO2</td><td>0x31</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Input / output type</th><th>Setting value (Hex)</th></tr>
<tr><td>‘I’ : Input</td><td>0x49</td></tr>
<tr><td>‘O’ : Output</td><td>0x4F</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Terminal number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’</td><td>0x30</td></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
</table></td></tr>
<tr><td>7</td><td>DATA4</td><td>※ASCII code
<table>
<tr><th>Input function type</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : Addr0</td><td>0x30</td></tr>
<tr><td>‘1’ : Addr1</td><td>0x31</td></tr>
<tr><td>‘2’ : Addr2</td><td>0x32</td></tr>
<tr><td>‘3’ : Addr3</td><td>0x33</td></tr>
<tr><td>‘4’ : Dreq</td><td>0x34</td></tr>
<tr><td>‘5’ : Comp0</td><td>0x35</td></tr>
<tr><td>‘6’ : Comp1</td><td>0x36</td></tr>
<tr><td>‘7’ : Comp2</td><td>0x37</td></tr>
<tr><td>‘8’ : Reset</td><td>0x38</td></tr>
<tr><td>‘9’ : Preset</td><td>0x39</td></tr>
<tr><td>‘A’ : Reset_org</td><td>0x41</td></tr>
<tr><td>‘B’ : Mode0</td><td>0x42</td></tr>
<tr><td>‘C’ : Mode1</td><td>0x43</td></tr>
<tr><td>‘D’ : Start</td><td>0x44</td></tr>
<tr><td>‘E’ : Pause</td><td>0x45</td></tr>
<tr><td>‘X’ : No_Func</td><td>0x58</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td></td><td>※ASCII code<table><tr><th>Output function type</th><th>Setting value (Hex)</th></tr><tr><td>‘0’ : Drdy</td><td>0x30</td></tr><tr><td>‘1’ : Comp_out0</td><td>0x31</td></tr><tr><td>‘2’ : Comp_out1</td><td>0x32</td></tr><tr><td>‘3’ : Comp_out2</td><td>0x33</td></tr><tr><td>‘4’ : Comp_out3</td><td>0x34</td></tr><tr><td>‘5’ : Comp_out4</td><td>0x35</td></tr><tr><td>‘6’ : Alarm</td><td>0x36</td></tr><tr><td>‘7’ : Org_pass</td><td>0x37</td></tr><tr><td>‘X’ : No_Func</td><td>0x58</td></tr></table></td></tr>
<tr><td>8～15</td><td>DATA5<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x13</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8～12</td><td>DATA5<br>～<br>DATA9</td><td>Success or failure of setting　※ASCII code<table><tr><th>Data</th><th>Value (Hex)</th><th>Contents</th></tr><tr><td>“OK000”</td><td>0x4F 0x4B 0x30 0x30 0x30</td><td>Successful termination</td></tr></table></td></tr>
<tr><td>13～19</td><td>DATA10<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

## (17)　I / O function assignment acquisition command

<table>
<tr><th>Offset</th><th>Label</th><th>Setting value (Hex)</th></tr>
<tr><td>0</td><td>INC</td><td>Please enter an arbitrary value different from the value previously sent.</td></tr>
<tr><td>1</td><td>CMD</td><td>0x14</td></tr>
<tr><td>2</td><td>RSV1</td><td>0x00</td></tr>
<tr><td>3</td><td>RSV2</td><td>0x00</td></tr>
<tr><td>4</td><td>DATA1</td><td>※ASCII code
<table>
<tr><th>I / O module number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : IO1</td><td>0x30</td></tr>
<tr><td>‘1’ : IO2</td><td>0x31</td></tr>
</table></td></tr>
<tr><td>5</td><td>DATA2</td><td>※ASCII code
<table>
<tr><th>Input / output type</th><th>Setting value (Hex)</th></tr>
<tr><td>‘I’ :　Input type</td><td>0x49</td></tr>
<tr><td>‘O’ : Output type</td><td>0x4F</td></tr>
</table></td></tr>
<tr><td>6</td><td>DATA3</td><td>※ASCII code
<table>
<tr><th>Terminal number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’</td><td>0x30</td></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
</table></td></tr>
<tr><td>7～15</td><td>DATA4<br>～<br>DATA12</td><td>Dummy<br>0x00</td></tr>
</table>

Response data

<table>
<tr><th>Offset</th><th>Label</th><th>Response data (Hex)</th></tr>
<tr><td>0～3</td><td>HEAD</td><td>Header information</td></tr>
<tr><td>4</td><td>DATA1</td><td>INC : ＊＊</td></tr>
<tr><td>5</td><td>DATA2</td><td>CMD : 0x14</td></tr>
<tr><td>6</td><td>DATA3</td><td>RSV1 : 0x00</td></tr>
<tr><td>7</td><td>DATA4</td><td>RSV2 : 0x00</td></tr>
<tr><td>8</td><td>DATA5</td><td>※ASCII code
<table>
<tr><th>Target I / O module number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : IO1</td><td>0x30</td></tr>
<tr><td>‘1’ : IO2</td><td>0x31</td></tr>
</table></td></tr>
<tr><td>9</td><td>DATA6</td><td>※ASCII code
<table>
<tr><th>Type</th><th>Setting value (Hex)</th></tr>
<tr><td>‘I’ : Input</td><td>0x49</td></tr>
<tr><td>‘O’ : Output</td><td>0x4F</td></tr>
</table></td></tr>
<tr><td>10</td><td>DATA7</td><td>※ASCII code
<table>
<tr><th>Terminal number</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’</td><td>0x30</td></tr>
<tr><td>‘1’</td><td>0x31</td></tr>
<tr><td>‘2’</td><td>0x32</td></tr>
<tr><td>‘3’</td><td>0x33</td></tr>
<tr><td>‘4’</td><td>0x34</td></tr>
<tr><td>‘5’</td><td>0x35</td></tr>
<tr><td>‘6’</td><td>0x36</td></tr>
<tr><td>‘7’</td><td>0x37</td></tr>
</table></td></tr>
<tr><td>11</td><td>DATA8</td><td>※ASCII code
<table>
<tr><th>Input function</th><th>Setting value (Hex)</th></tr>
<tr><td>‘0’ : Addr0</td><td>0x30</td></tr>
<tr><td>‘1’ : Addr1</td><td>0x31</td></tr>
<tr><td>‘2’ : Addr2</td><td>0x32</td></tr>
<tr><td>‘3’ : Addr3</td><td>0x33</td></tr>
<tr><td>‘4’ : Dreq</td><td>0x34</td></tr>
<tr><td>‘5’ : Comp0</td><td>0x35</td></tr>
<tr><td>‘6’ : Comp1</td><td>0x36</td></tr>
<tr><td>‘7’ : Comp2</td><td>0x37</td></tr>
<tr><td>‘8’ : Reset</td><td>0x38</td></tr>
<tr><td>‘9’ : Preset</td><td>0x39</td></tr>
<tr><td>‘A’ : Reset_org</td><td>0x41</td></tr>
<tr><td>‘B’ : Mode0</td><td>0x42</td></tr>
<tr><td>‘C’ : Mode1</td><td>0x43</td></tr>
<tr><td>‘D’ : Start</td><td>0x44</td></tr>
<tr><td>‘E’ : Pause</td><td>0x45</td></tr>
<tr><td>‘X’ : No_Func</td><td>0x58</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td></td><td>※ASCII code<br><table><tr><th>Output function</th><th>Setting value (Hex)</th></tr><tr><td>‘0’ : Drdy</td><td>0x30</td></tr><tr><td>‘1’ : Comp_out0</td><td>0x31</td></tr><tr><td>‘2’ : Comp_out1</td><td>0x32</td></tr><tr><td>‘3’ : Comp_out2</td><td>0x33</td></tr><tr><td>‘4’ : Comp_out3</td><td>0x34</td></tr><tr><td>‘5’ : Comp_out4</td><td>0x35</td></tr><tr><td>‘6’ : Alarm</td><td>0x36</td></tr><tr><td>‘7’ : Org_pass</td><td>0x37</td></tr><tr><td>‘X’ : No_Func</td><td>0x58</td></tr></table></td></tr>
<tr><td>12～19</td><td>DATA9<br>～<br>DATA16</td><td>Dummy<br>0x00</td></tr>
</table>

*See chapter 6.1.4. for error information.

(18) Reset instruction command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x15 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5～15 | DATA2 ～ DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : * * |
| 5 | DATA2 | CMD : 0x15 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5 ～ DATA9 | Success or failure of setting ※ASCII code<br>Data: "OK000" / Value (Hex): 0x4F 0x4B 0x30 0x30 0x30 / Contents: Successful termination |
| 13～19 | DATA10 ～ DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(19)　Preset value setting command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x16 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5<br>～<br>8 | DATA2<br>～<br>DATA5 | Preset value<br>※ 0.1μm unit(4Byte integer)<br>(Example)<br>＋0.1μm → ＋1 (0x01)<br>－0.1μm → －1 (0xFFFFFFFF)<br><br>＋12.3456mm → ＋123456 (0x19C53)<br>－12.3456mm → －123456 (0xFFFE1DC0) |
| 9～15 | DATA6<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x16 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting　※ASCII code<br>Data: Value (Hex): Contents<br>"OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(20)　Preset value acquisition command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x17 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | CIP header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x17 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8 | DATA5 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 9<br>～<br>12 | DATA6<br>～<br>DATA9 | Preset value<br>※　0.1μm unit(4Byte integer)<br><br>(例)<br>＋0.1μm → ＋1 (0x01)<br>－0.1μm → －1 (0xFFFFFFFF) |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(21) Preset call instruction command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x18 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5～15 | DATA2 ～ DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : * * |
| 5 | DATA2 | CMD : 0x18 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5 ～ DATA9 | Success or failure of setting ※ASCII code<br>Data: "OK000" / Value (Hex): 0x4F 0x4B 0x30 0x30 0x30 / Contents: Successful termination |
| 13～19 | DATA10 ～ DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(22) Master preset value setting command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x19 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 5<br>～<br>8 | DATA2<br>～<br>DATA5 | Master preset value<br>※ 0.1μm unit(4Byte integer)<br>(Example)<br>＋0.1μm → ＋1 (0x01)<br>－0.1μm → －1 (0xFFFFFFFF)<br><br>＋12.3456mm → ＋123456 (0x19C53)<br>－12.3456mm → －123456 (0xFFFE1DC0) |
| 9～15 | DATA6<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x19 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting ※ASCII code<br>Data: "OK000" / Value (Hex): 0x4F 0x4B 0x30 0x30 0x30 / Contents: Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(23)　Master preset value acquisition command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x1A |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x1A |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8 | DATA5 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 9<br>～<br>12 | DATA6<br>～<br>DATA9 | Master preset value<br>※　0.1μm unit(4Byte integer)<br><br>(例)<br>＋0.1μm → ＋1 (0x01)<br>－0.1μm → －1 (0xFFFFFFFF) |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(24) Master preset call instruction command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x1B |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x1B |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8 | DATA5 | ※ASCII code<br>Axis number: Setting value (Hex)<br>'1'～'10': 0x30～0x39<br>'11'～'16': 0x41～0x46 |
| 9<br>～<br>12 | DATA6<br>～<br>DATA9 | Master preset value<br>※ 0.1μm unit(4Byte integer)<br>(Example)<br>＋0.1μm → ＋1 (0x01)<br>－0.1μm → －1 (0xFFFFFFFF) |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(25)　Start instruction command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x1F |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x1F |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting　※ASCII code<br>Data: "OK000" / Value (Hex): 0x4F 0x4B 0x30 0x30 0x30 / Contents: Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(26)　Pause ON / OFF setting command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x20 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5 | DATA2 | ※ASCII code<br>Pause ON/OFF: Setting value (Hex)<br>'0' : OFF: 0x30<br>'1' : ON: 0x31 |
| 6～15 | DATA3<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x20 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting　※ASCII code<br>Data: Value (Hex): Contents<br>"OK000": 0x4F 0x4B 0x30 0x30 0x30: Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(27)　Pause ON / OFF setting acquisition command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x21 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 5～15 | DATA2<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x21 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8 | DATA5 | ※ASCII code<br>Frame number: Setting value (Hex)<br>'A'～'J': 0x30～0x39<br>'K'～'P': 0x41～0x46 |
| 9 | DATA6 | ※ASCII code<br>Pause ON/OFF: Setting value (Hex)<br>'0' : OFF: 0x30<br>'1' : ON: 0x31 |
| 10～19 | DATA7<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(28) Unit setting command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x39 |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4 | DATA1 | ※ASCII code<br>Unit: ‘0’ : mm → 0x30; ‘1’ : other → 0x31 |
| 5～15 | DATA2 ～ DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x39 |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5 ～ DATA9 | Success or failure of setting ※ASCII code<br>Data: “OK000” → Value (Hex): 0x4F 0x4B 0x30 0x30 0x30 → Contents: Successful termination |
| 13～19 | DATA10 ～ DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(29)　Unit acquisition command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x3A |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4～15 | DATA1<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC：＊＊ |
| 5 | DATA2 | CMD：0x3A |
| 6 | DATA3 | RSV1：0x00 |
| 7 | DATA4 | RSV2：0x00 |
| 8 | DATA5 | ※アスキーコード<br>Unit: Setting value (Hex)<br>‘0’：0.1μm: 0x30<br>‘1’：other 0.000001/25.4 mm: 0x31 |
| 9～19 | DATA6<br>～<br>DATA16 | ダミー<br>0x00 |

*See chapter 6.1.4. for error information.

(30) Parameter save instruction command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x3E |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4～15 | DATA1<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : ＊＊ |
| 5 | DATA2 | CMD : 0x3E |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting ※ASCII code<br>Data / Value (Hex) / Contents<br>“OK000” / 0x4F 0x4B 0x30 0x30 0x30 / Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

(31) Parameter initialization instruction command

| Offset | Label | Setting value (Hex) |
|---|---|---|
| 0 | INC | Please enter an arbitrary value different from the value previously sent. |
| 1 | CMD | 0x3F |
| 2 | RSV1 | 0x00 |
| 3 | RSV2 | 0x00 |
| 4～15 | DATA1<br>～<br>DATA12 | Dummy<br>0x00 |

Response data

| Offset | Label | Response data (Hex) |
|---|---|---|
| 0～3 | HEAD | Header information |
| 4 | DATA1 | INC : * * |
| 5 | DATA2 | CMD : 0x3F |
| 6 | DATA3 | RSV1 : 0x00 |
| 7 | DATA4 | RSV2 : 0x00 |
| 8～12 | DATA5<br>～<br>DATA9 | Success or failure of setting ※ASCII code<br>Data / Value (Hex) / Contents<br>"OK000" / 0x4F 0x4B 0x30 0x30 0x30 / Successful termination |
| 13～19 | DATA10<br>～<br>DATA16 | Dummy<br>0x00 |

*See chapter 6.1.4. for error information.

### 6.1.4. Command error in NRT communication

When an error occurs in the command, the following error code (ASCII code) will be stored in DATA5 to DATA9.

| Data | Value (Hex) | Contents |
|---|---|---|
| “ERR01” | 0x45 0x52 0x52 0x30 0x31 | Installation mode error |
| “ERR02” | 0x45 0x52 0x52 0x30 0x32 | Command format error |
| “ERR03” | 0x45 0x52 0x52 0x30 0x33 | Parameter value error |
| “ERR04” | 0x45 0x52 0x52 0x30 0x34 | Time-out occurred |
| “ERR05” | 0x45 0x52 0x52 0x30 0x35 | Frame number error |
| “ERR06” | 0x45 0x52 0x52 0x30 0x36 | Checksum error |
| “ERR07” | 0x45 0x52 0x52 0x30 0x37 | Parameter save error |
| “ERR70” | 0x45 0x52 0x52 0x37 0x30 | Wait time insufficient error |
| “ERR80” | 0x45 0x52 0x52 0x38 0x30 | Command number error |
| “ERR99” | 0x45 0x52 0x52 0x39 0x39 | Errors other than the above |

# 7. Appendix

## 7.1. Parameter list

**Parameter list**

| Item | | | Set value(ASCII code) | | Lower limit | Upper limit | Default |
|---|---|---|---|---|---|---|---|
| Network information | | | IP address | | 0x00000000 | 0xFFFFFFFF | 0xC0A86401 |
| | | | Subnet mask | | 0x00000000 | 0xFFFFFFFF | 0xFFFFFF00 |
| | | | Default gateway | | 0x00000000 | 0xFFFFFFFF | 0xC0A864FE |
| | | | Reserved | | - | - | - |
| Input resolution | Measuring unit 1 ～ Measuring unit 16 | Sign | + | Positive direction | + | - | + |
| | | | - | Minus direction | | | |
| | | Resolution | 1 | 0.1um | 1 | 6 | 1 |
| | | | 2 | 0.5um | | | |
| | | | 3 | 1.0um | | | |
| | | | 4 | 2.0um | | | |
| | | | 5 | 5.0um | | | |
| | | | 6 | 10.0um | | | |
| | | Reference point | 0 | OFF | 0 | 1 | 0 |
| | | | 1 | ON | | | |
| output | Frame A ～ Frame P | Output type | 0 | Current values | 0 | 3 | 0 |
| | | | 1 | Maximum values | | | |
| | | | 2 | Minimum values | | | |
| | | | 3 | Peak to peak values | | | |

| Item | | | Set value(ASCII code) | | Lower limit | Upper limit | Default |
|---|---|---|---|---|---|---|---|
| Axis calculation | Flame A ～ Flame P | Sign of measuring unit Ⓐ | + | Plus sign | + | – | + |
| | | | – | Minus sign | | | |
| | | Measuring unit Ⓐ number | 0 | Measuring unit 1 value | 0 | F | Same value as frame number |
| | | | 1 | Measuring unit 2 value | | | |
| | | | 2 | Measuring unit 3 value | | | |
| | | | 3 | Measuring unit 4 value | | | |
| | | | 4 | Measuring unit 5 value | | | |
| | | | 5 | Measuring unit 6 value | | | |
| | | | 6 | Measuring unit 7 value | | | |
| | | | 7 | Measuring unit 8 value | | | |
| | | | 8 | Measuring unit 9 value | | | |
| | | | 9 | Measuring unit 10 value | | | |
| | | | A | Measuring unit 11 value | | | |
| | | | B | Measuring unit 12 value | | | |
| | | | C | Measuring unit 13 value | | | |
| | | | D | Measuring unit 14 value | | | |
| | | | E | Measuring unit 15 value | | | |
| | | | F | Measuring unit 16 value | | | |
| | | Sign of measuring unit Ⓑ | + | Plus sign | + | – | + |
| | | | – | Minus sign | | | |
| | | Measuring unit Ⓑ number | 0 | Measuring unit 1 value | 0 | F | Blank |
| | | | 1 | Measuring unit 2 value | | | |
| | | | 2 | Measuring unit 3 value | | | |
| | | | 3 | Measuring unit 4 value | | | |
| | | | 4 | Measuring unit 5 value | | | |
| | | | 5 | Measuring unit 6 value | | | |
| | | | 6 | Measuring unit 7 value | | | |
| | | | 7 | Measuring unit 8 value | | | |
| | | | 8 | Measuring unit 9 value | | | |
| | | | 9 | Measuring unit 10 value | | | |
| | | | A | Measuring unit 11 value | | | |
| | | | B | Measuring unit 12 value | | | |
| | | | C | Measuring unit 13 value | | | |
| | | | D | Measuring unit 14 value | | | |
| | | | E | Measuring unit 15 value | | | |
| | | | F | Measuring unit 16 value | | | |

| Item | | | Set value(ASCII code) | | Lower limit | Upper limit | Default |
|---|---|---|---|---|---|---|---|
| Comparator setting | Flame A ～ Flame P | Comparator group number | 1 | Group 1 | 1 | 8 | 1 |
| | | | 2 | Group 2 | | | |
| | | | 3 | Group 3 | | | |
| | | | 4 | Group 4 | | | |
| | | | 5 | Group 5 | | | |
| | | | 6 | Group 6 | | | |
| | | | 7 | Group 7 | | | |
| | | | 8 | Group 8 | | | |
| | | Mode | 0 | None | 0 | 2 | 0 |
| | | | 1 | Step 2 | | | |
| | | | 2 | Step 4 | | | |
| | | Comparator thresholds for groups 1 to 8 | Step 1 | Compare threshold1 | -99999999 | 99999999 | 0 |
| | | | Step 2 | Compare threshold2 | | | |
| | | | Step 3 | Compare threshold3 | | | |
| | | | Step 4 | Compare threshold4 | | | |
| I/O | IO1～IO2 | Input function for each bit<br><br>Bit 0～7 | 0 | Target ID(bit0) | 0 | X | X |
| | | | 1 | Target ID(bit1) | | | |
| | | | 2 | Target ID(bit2) | | | |
| | | | 3 | Target ID(bit3) | | | |
| | | | 4 | Data request signal | | | |
| | | | 5 | Comparator group (bit0) | | | |
| | | | 6 | Comparator group (bit1) | | | |
| | | | 7 | Comparator group (bit2) | | | |
| | | | 8 | Reset command | | | |
| | | | 9 | Preset call command | | | |
| | | | A | Reference point reacquisition | | | |
| | | | B | Output value mode (bit0) | | | |
| | | | C | Output value mode (bit1) | | | |
| | | | D | Start signal | | | |
| | | | E | Pause signal | | | |
| | | | X | None | | | |
| | | Output function<br><br>Bit 0～7 | 0 | Data ready signal | 0 | 7 | X |
| | | | 1 | Comparator area 0 | | | |
| | | | 2 | Comparator area 1 | | | |
| | | | 3 | Comparator area 2 | | | |
| | | | 4 | Comparator area 3 | | | |
| | | | 5 | Comparator area 4 | | | |
| | | | 6 | Alarm output | | | |
| | | | 7 | Reference point pass flag | | | |
| | | | X | None | | | |

| Item | | | Set value(ASCII code) | | Lower limit | Upper limit | Default |
|---|---|---|---|---|---|---|---|
| Preset | Flame A<br>～<br>Flame P | Presets for each frame | Preset value | | -99999999 | 99999999 | 0 |
| Master preset | Measuring unit 1<br>～<br>Measuring unit 16 | Preset for each measuring unit | Master preset value | | -99999999 | 99999999 | 0 |
| Pause | Flame A<br>～<br>Flame P | Pause for each frame | 0 | Pause OFF | 0 | 1 | 0 |
| | | | 1 | Pause ON | | | |

# 7.2. Status code

**Status code list**

| bit number | Status |
|---|---|
| 7 | Communication error between modules (Error: 1, No error: 0) |
| 6 | Pause (ON:1, OFF:0) |
| 5 | Reservation |
| 4 | Reservation |
| 3 | Reference point information (Reference point derected:1, Reference point not detecred:0) |
| 2 | Reservation |
| 1 | MG80-CM Error (Error: 1, No error: 0)) |
| 0 | Error occurred (Error: 1, No error: 0) |

**日本からの輸出時における注意**

本製品(および技術)は輸出令別表第1の16の項(外為令別表16の項)に該当します。キャッチオール規制による経済産業省の許可要否につきましては、輸出者様にてご確認ください。

**For foreign customers**

**Note:** This product (or technology) may be restricted by the government in your country. Please make sure that end-use, end user and country of destination of this product do not violate your local government regulation.

Magnescale Co., Ltd.

45 Suzukawa, Isehara-shi, Kanagawa 259-1146, Japan

MG80-PN
2-A02-958-1C

2022.12
Printed in Japan